

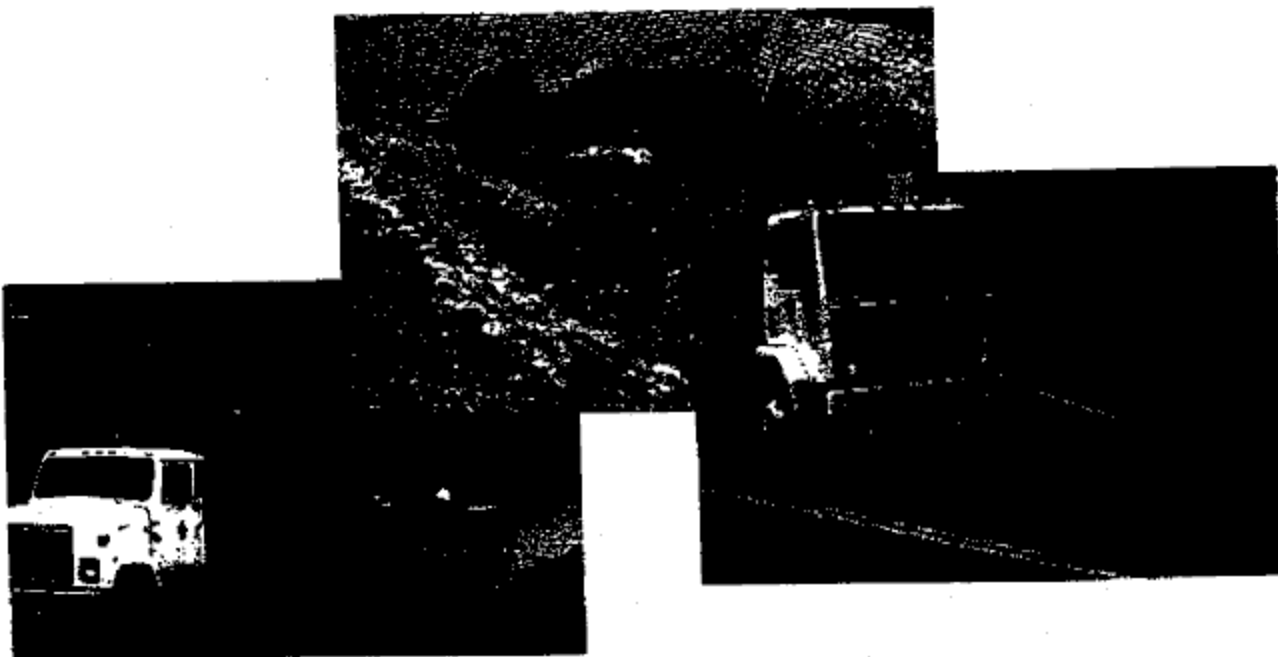


EXHIBIT 1

San Bernardino County



Proposal for Maintenance Management System Review – RFP#PUR02-08



December 20, 2002



Lorick Associates
CONSULTING

1208 Manhattan Avenue, Suite 210
Manhattan Beach, CA 90266
Ph: (310) 374-8777
Fax: (310) 374-8867

TABLE OF CONTENTS

RFP# PUR02-08

**Proposal for Maintenance
Management Consulting Services**

Cover Page...1

Statement of Certification...2

Statement of Qualifications...3

Mandatory Requirements...4

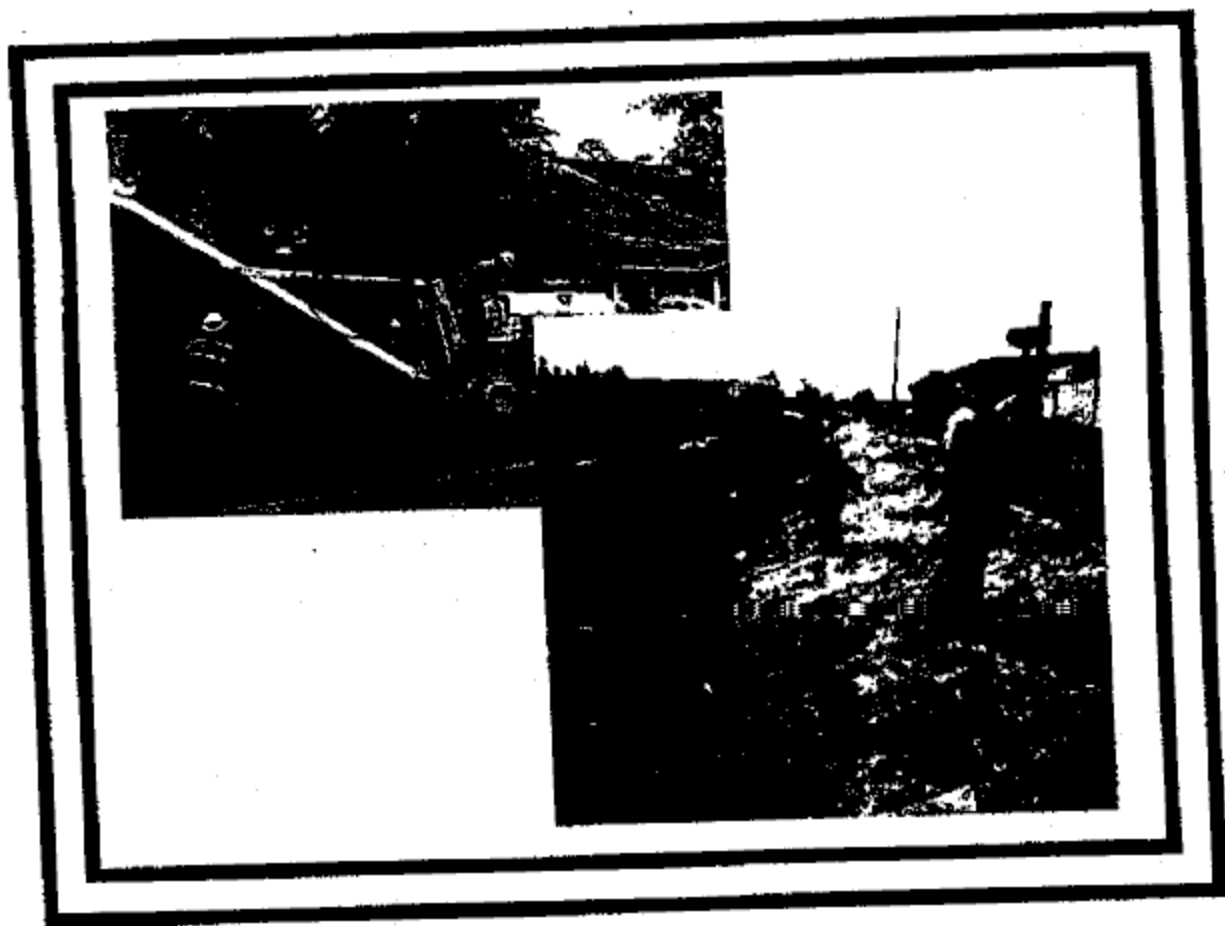
Exceptions to RFP...5

Scope of Work & Cost...6

Appendix...7

Section 1

Cover Page





Lorick Associates
CONSULTING

December 20, 2002

Ms. Betty Alexander, Contracts Analyst
San Bernardino County Purchasing Department
General Services Building
777 East Rialto Avenue
San Bernardino, CA 92415-0760

Subject: RFP No. PUR02-08 - Maintenance Management System Review

Dear Ms. Alexander:

Pursuant the review of your request for proposal, LA Consulting, Inc. (LAC) is pleased to be submitting this proposal in response to the Request for Proposal for Maintenance Management System Review, RFP# PUR02-08.

LAC is very familiar with evaluating and assisting Public Works, Transportation and Flood Control Agencies throughout the United States to become more efficient using management and technology. Our approach has been most successful and we have worked with similar agencies in California and elsewhere such as Orange County (CA), Alameda County (CA), San Diego County (CA), Washoe County (NV), Seminole County (FL), Charlotte County (FL), Hernando County (FL) and Clark County (WA). We are currently in the process of implementation in Contra Costa County and Santa Clara County in California. We specialize in providing and implementing solutions to public works agencies across the nation. We work together with our clients and their employees from the managers to their staff to better align their personnel, processes, and information systems with the changing government landscape.

Our expertise is clearly documented with successful projects in use by our clients. Our objective is to ensure that your system is designed to perform effectively in operation and efficiency. Our project principal, Harry Lorick, CE and TE, has extensive background (30 years) in pavement systems and roadway maintenance. He has documented his many successful projects in over ten articles written within the last three years. He will guide in the evaluation and assist in the implementation. In addition, he often speaks at APWA, MSA and engineering groups on pavement and infrastructure systems. Ms. Arnie Drotning will assist in the evaluation, interface with software implementation and guide best management and work practices. She also is a frequent presenter at APWA, where only last year she spoke three times at the national conference in Kansas City. Ms. Drotning's background in maintenance systems includes several systems for counties and cities such as Alameda, Orange and San Diego County, CA along with the Cities of Orange, Fremont, Reno and Emeryville. Also, Bill Reiter, with over 35 years background in maintenance and a known expert in infrastructure and flood maintenance operations, will assist in field evaluation. He has done similar efforts in California in the counties of Alameda, Contra Costa, San Mateo and Santa Clara as well as many California Cities. They will be supported by other capable staff members.

"We Help Public Works Work"

Phone: 310-374-5777 • Fax: 310-374-7555 • email: info@laconsulting.com

Mailing Address: 1209 Manhattan Ave. Suite 310 • Manhattan Beach, CA 90266

Internet address: www.laconsulting.com

We believe you will conclude that LAC makes an excellent management consultant for this project for a variety of reasons:

SOUTHERN CALIFORNIA EXPERIENCE - LAC has evaluated and implemented systems throughout Southern California, which included efforts for Alameda, Orange and San Diego Counties as well as over ten cities such as the Cities of Orange, Ontario, Santa Clarita and South Gate. Further, we are familiar with the San Bernardino County Public Works, Transportation and Flood Control divisions. We assisted the County of Orange PERD/O&M division staff in conjunction with San Bernardino staff to implement a work program for operations and maintenance of the Seven Oaks Dam.

INTIMATE KNOWLEDGE - LAC has evaluated, designed, and implemented systems throughout the United States, and we are on the cutting edge of maintenance systems development. LAC has implemented projects for storm water, flood, streets and traffic as well parks, grounds, water, sewer, and buildings. LAC has worked with several road and flood control agencies including Orange and Alameda Counties. LAC was selected by ASCE to conduct nation-wide Maintenance Systems Training in addition to being chosen to give thirteen separate presentations related to maintenance at the National 2000-2 APWA Conferences. We have been speakers at annual meetings on maintenance in Florida, Washington, California and Nevada.

SIMILAR MAJOR MMS ASSIGNMENTS - The LAC Project Manager and staff assigned to this project have successfully implemented management systems for many agencies in the United States with many assignments matching identically in California to your needs. Examples include, Orange County, Alameda County, Contra Costa, San Diego, and Santa Clara, CA, Hernando, Charlotte and Seminole in Florida, Washoe County, NV, Clarke, WA. These projects were similar to the scope discussed with you and involved not only systems but also their implementation.

WORKING KNOWLEDGE OF COMPUTER SYSTEMS - Experience with Multiple MMS software - LAC has implemented systems on multiple software platforms. LAC has used different systems from GBA, Hansen, CitiTech, Bender, Burke, RJN to RJA. We have also been retained to help agencies develop their own systems. Though we do not sell software, we understand how to make the system work for Public Works agencies. LAC has the hands-on experience on stand-alone and network computer systems from loading the software to operating the system; and LAC can do this without the need for a learning curve or training.

BLEND OF SKILLS - LAC brings to this assignment a mixture of experience in public works, maintenance, systems and computers coupled with training, communication and consensus building skill capabilities. LAC staff has already encountered many of the issues facing maintenance staff while on prior similar assignments and has developed considerable public involvement and communication skills. In addition, with a complete focus on the actual implementation, we understand the pitfalls that may arise.

IMPLEMENTATION SUCCESS - LAC has developed and guided agencies to use a systematic approach, which allows public agencies to become competitive. Examples are a 25% increase in street sweeping in one agency and improvement in pavement quality for one county while decreasing their budget by a \$900,000 savings in one year. In addition, LAC, as part of the system implementation, develops an on-going system for improvement, activity based costing, benchmarking and a mechanism

"We Help Public Works Work"

Phone: 310-374-5777 • Fax: 310-374-7555 • email: info@lacoconsulting.com
Billing Address: 1209 Manhattan Ave. Suite 310 • Manhattan Beach, CA 90266
Internet address: www.lacoconsulting.com

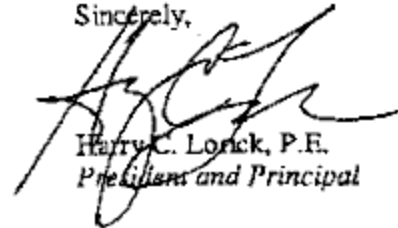
to compare public versus private contracting.

The scope submitted in section 6 is outlined in two phases. Phase 1 – Investigate and document current operation, and Phase 2 – Guide County in selecting appropriate maintenance and asset management software. Detail tasks are defined for phase 1 and 2 with descriptions that include the process, methods and procedures to be used and the end product expected from each task.

This is a challenging assignment. LA Consulting has discussed the system with staff and reviewed the detail information provided for a better understanding of the City's needs. LAC has the capabilities and necessary resources to ensure a successful project. We look forward to sharing our approach to developing and helping Public Works, Transportation and Flood Control to evaluate, design and fully apply a systematic approach to maintenance. LAC wants to do this project, and we look forward to further demonstrating our capabilities.

By this letter, I as a company officer commit this proposal as firm and binding for a 120 day period from opening and recording of proposal on behalf of LA Consulting, Inc. Harry Lorick, President, shall be the contact at (310) 374 5777 for all negotiations on this proposal, scope of work and contract. Ms. Drotning, Senior Associate at the same phone number will be authorized in scope modifications.

Sincerely,



Harry C. Lorick, P.E.
President and Principal

"We Help Public Works Work"

Phone: 310-374-5777 • Fax: 310-374-7555 • email: info@laconsulting.com
Mailing Address: 1209 Manhattan Ave. Suite 310 • Manhattan Beach, CA 90286
Internet address: www.laconsulting.com

PROPOSAL FOR MAINTENANCE MANAGEMENT SYSTEM REVIEW

VENDOR'S NAME (name of firm, entity or organization):

LA Consulting, Inc.

FEDERAL EMPLOYER IDENTIFICATION NUMBER:

MAILING ADDRESS:

Street Address: 1209 Manhattan Ave, Suite 310

City, State, Zip: Manhattan Beach, CA 90266

TELEPHONE NUMBER: (310)374-5777

FAX NUMBER: (310)374-5557

EMAIL ADDRESS: lacon@ix.netcom.com

VENDOR'S ORGANIZATIONAL STRUCTURE

☒ Corporation ☐ Partnership ☐ Proprietorship ☐ Joint Venture

☐ Other (Explain):

If Corporation, Date Incorporate: 5/2/1995 State Incorporated: CA

States Registered in as foreign corporation:

VENDOR'S SERVICES OR BUSINESS ACTIVITIES OTHER THAN THIS RFP REQUESTS:

Maintenance and Operations Evaluation and Implementation

VENDOR'S AUTHORIZED SIGNATURE:

The undersigned hereby certifies that this proposal is submitted in response to this solicitation.

SIGNED: 

DATE: 12/29/02

PRINT NAME: Harry Lorick

TITLE: President

"We Help Public Works Work"

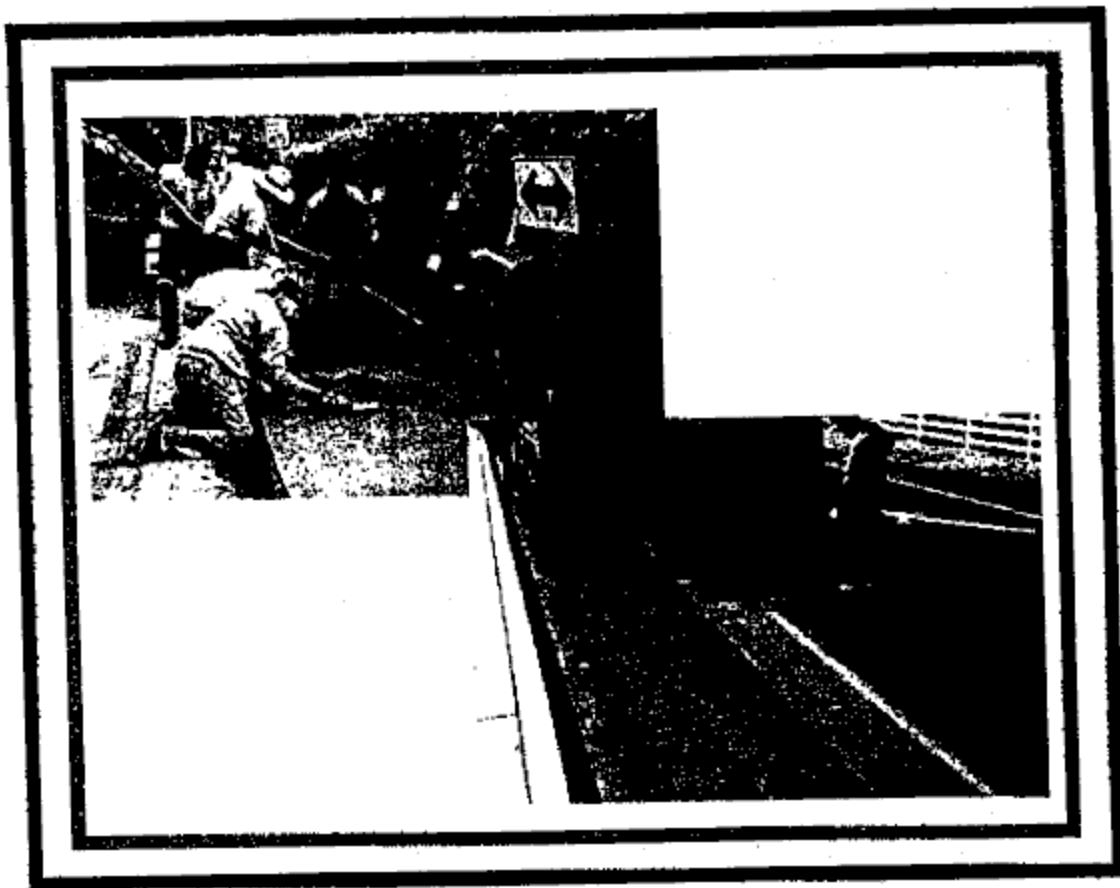
Phone: 310-374-5777 • Fax: 310-374-7555 • email: info@laconsulting.com

Mailing Address: 1209 Manhattan Ave, Suite 310 • Manhattan Beach, CA 90266

Internet address: www.laconsulting.com

Section 2

Statement of Certification



ATTACHMENT D - STATEMENT OF CERTIFICATION

The following statements are incorporated as part of our proposal for maintenance management software systems consultation in response to County of San Bernardino RFP for Maintenance Management System.

	Statement	Agree (initial)	Agree with qualification (initial and attach explanation)
1.	A statement that the offer made in the proposal is firm and binding for 120 days from the date the proposal is opened and recorded.	<i>HC</i>	
2.	A statement that all aspects of this proposal, including cost, have been determined independently, without consultation with any other prospective Proposer or competitor for the purpose of restricting competition.	<i>HC</i>	
3.	A statement that all declarations in this proposal and attachments are true and that this shall constitute a warranty, the falsity of which shall entitle the County to pursue any remedy by law.	<i>HC</i>	
4.	A statement that the Proposer agrees that all aspects of this RFP and the proposal submitted shall be binding if the proposal is selected and a contract awarded, and the County will be provided with any other information the County determines is necessary for an accurate determination of our ability to provide the services being proposed.	<i>HC</i>	
5.	A statement that the Proposer, if selected, will comply with all applicable contract requirements, rules, laws, and regulations.	<i>HC</i>	
6.	A statement that the Proposer agrees to respond to any reasonable inquiry made by the County for the purpose of clarifying any of the information contained in a Proposer's proposal. The submission of a proposal constitutes permission by the Proposer for the County to verify all information contained therein. If the County deems it necessary, additional information may be requested from the Proposer. Failure to comply with any such request may disqualify a Proposer from further consideration. Such additional information may include evidence of financial ability to perform.	<i>HC</i>	
7.	A statement that the Proposer does not have any commitments or potential commitments which may impact the Proposer's assets, lines of credit, guarantor letters, or ability to perform the contract.	<i>HC</i>	

Signature

Hardy C. Corrick

Print name

12/20/02

Date

Company

LA Consulting

Section 3

Statement of Qualifications



SECTION 3 STATEMENT OF QUALIFICATIONS

A. GENERAL BACKGROUND

LA Consulting (LAC), a California Corporation, was founded in 1993 to assist government agencies in planning for infrastructure improvements and operations and has grown to 9 employees. LAC's projects include such clients as: the Counties of Orange, San Diego, Alameda, Contra Costa, Santa Clara, Washoe, NV, Seminole, FL, Hernando, FL and Charlotte, FL. The Cities of Fremont, Pleasanton, South Gate, Santa Monica, Carson, Laguna Hills, Huntington Beach, Ontario, Culver City, Emeryville, Santa Clarita, Sparks (NV), Reno (NV), and Prescott (AZ). The company headquarters is located in Manhattan Beach, California. The firm is comprised of engineers, management and technology consultants, and specializes in applying technology to public works, utility and park infrastructure operations and maintenance.

B. LOCATION OF OFFICE

Mailing:

LA Consulting Headquarters
1209 Manhattan Ave., Suite 310
Manhattan Beach, CA 90266

Physical:

1124 11st
Manhattan Beach, Ca 90266

C. RELEVANT CLIENTS AND EXPERIENCE

- (1) Project: Develop, Implement and Operate a Road & Flood Maintenance System
Client: Orange County, CA
Contact: Ms. Carol Graeber or Bill Tidwell, Manager (714) 567-6300
LAC Staff: H. Lorick, A. Drotning, N. Nguyen, G. Gowans, L. Cox
Date: 10/1/94 - 3/96; 1/97-6/00; 7/00 - 6/03

For Public Facilities and Resources Department/Operations and Maintenance, LAC provides multi-year assistance to their management system. This effort includes utilization of current technologies (GIS) to assist the agency in becoming more efficient in its day to day operation and providing assistance in coordinating the related agencies in five contract cities. The effort includes continuous review and maintenance of the system for improvement and on-site review of better ways to conduct maintenance work. LAC

prepares and manages the annual update of 20+ work plans and 100+ activity guidelines. LAC also monitors and updates the pavement management system software and traffic marking inventory in addition to the MMS. The success of this project is highlighted in both *Public Works Magazine* (April 1994, September 98) and *Roads and Bridges Magazine* (November 1994).

LAC developed and implemented the current system and has assisted in transition on two different occasions in software upgrades to new systems (RJA-Burke-Bender) and implementations with minimal impact on operations.

- (2) **Project:** **Assessment and Enhancement of Maintenance Operations**
 Client: **Alameda County, CA**
 Contact: **Mr. Rick Ruiz, Deputy Director of Public Works**
 Phone: **(510) 670-5506**
 LAC Staff: **H. Lorick, A. Drotning, N. Nguyen, L. Cox**
 Date: **9/96 - 6/97, 8/1/98-11/00, Present**

LAC was retained on three occasions to assist the agency. Initially LAC review current operation, assist in the development of an annual plan for a 700 lane-mile and 500 mile flood channel system, and to train staff to operate in the most efficient manner using an automation system. The assignment is to provide professional assistance to prepare a work plan for the staff to improve operations. Work involves considerable communications with staff, development of an annual plan, and guiding staff to develop an implementation process. Secondly, LAC is helped the County perform a benchmarking study to ascertain its effectiveness and efficiency to other agencies. We are working closely with senior management and unionized staff to help them compete.

More recently LAC performed a fleet management and operations review for the county to ascertain opportunities for improvement. Currently LAC is assisting in the process of selecting and implementing new maintenance management software.

- (3) **Project:** **MMS Review and Implementation**
 Client: **Contra Costa County**
 Contact: **Greg Connaughton, Asst. Director of Public Works**
 Phone: **(925) 313-7002**
 LAC Staff: **N. Nguyen, H. Lorick, Bill Reiter**
 Date: **8/00-4/01, 11/02-Present**

LAC evaluated county operations, documented the current system adequacies and established a systematic approach to evaluate the road, flood control and signs & markings activities. The work included an assessment of the 660 road mile system, 90 miles of flood channels and determination of the adequacy of the system. A complete report with 30 recommendations ranging from automated systems to storm plans was

prepared. All employees were involved and engaged as LAC meet with all at least four times. Further, LAC observed all work processes in the field. A panel was involved in reviewing the data, findings and recommendations that were made. The recommendations were made and documented in a final report.

LAC prepared the draft RFP and guided the County through the proposal process to select software. LAC mentored and coached in the process and participated in initial screening. The County panel actually selected the software.

LAC is currently implementing a complete infrastructure management system and is populating the database, training in system use and guiding in the implementation process. LAC is interfacing with software vendor to make operational.

- (4) **Project:** Implement a Regional Maintenance Management System
 Client: Regional Transportation Commission, Reno, NV
 Contact: Derek Morse, Asst. Director of Operations (775) 348-0400
 LAC Staff: H.Lorick, G.Gowans, A. Drotning
 Date: 3/95 - 2/96 and 1/00 to 11/02

LAC was retained on separate occasions to assist agency. First, LAC reviewed a 2,000+ lane mile regional roadway network that included the Cities of Reno, Sparks and Washoe County. The implementation included an evaluation of current operations, methods review, and identification of areas of improvement, presentation of alternatives and development of recommendations with a cost benefit assigned. These recommendations were accepted unanimously in a resolution by all four local agencies. In the second phase, the agencies retained LAC to actually implement improvements. LAC established a MMS in four agencies and trained over 200 staff in the use of methods to continuously improve maintenance operations. Four different networks based computerized MMS were implemented and are now operational. Over \$2.5 million in savings have occurred and have been documented.

LAC has been retained to provide the follow training, guidance in update and is assisting to improve operations.

- (5) **Project:** Roadway System MMS
 Client: Charlotte County, FL
 Contact: Mr. Ray Sandrock, Finance Manager of Public Works
 Phone: (941) 575-3600
 LAC Staff: H. Lorick, A. Drotning
 Date: 6/97 - 10/98

LAC evaluated the county-wide roadway operations, documented the current system

adequacies and established a systematic approach to evaluate the road and traffic facilities. The work included an assessment of a 2,230 road mile system and determination of the adequacy of the system. A citizen's panel was involved in reviewing the data, findings and recommendations that were made.

LAC completed a review of the Maintenance and Operations for the County and a list of recommendations were made and documented in a final report. LAC implemented a complete infrastructure management system. \$750,000 in savings was documented in the first six months of operation.

LAC was retained for small assignment in last two years 200-2002 for system use and training as well as guidance in GASB database compilation.

- (6) **Project:** Implementation of Maintenance Management System
Client: Clark County, WA
Contact: Bud Cave, Operations Manager
Phone: (360)397-2446
LAC Staff: N. Nguyen, H. Lorick
Date: 8/00-11/02

LAC assisted in the implementation of maintenance management software for the County, which maintains a network of over 2,750 lane miles of roads, 6,700 catch basin, 72 bridges and 115 sidewalk miles. During this process assisted in the implementation of the MMS and reviewed over 200 activity guidelines for the County.

In addition, LAC helped consolidate the County's reporting forms by streamlining the process. This was done by creating an automatic timesheet within the MMS to simplify payroll reporting.

- (7) **Project:** Management Review – Public Works Maintenance Division
Client: County of San Diego, CA
Contact: Mr. Thomas Hershberger, Manager, (619) 874-4011
LAC Staff: H. Lorick, N. Nguyen
Date: 2/99 – 8/99

LAC completed an evaluation of the County's management structure and process for its Public Works Field Engineering and Maintenance Department. Improvements to the Department's operation have been adopted to prepare it for *managed competition* and overall efficiency. Components assessed for improvement include such items as work processes, organizational structure, and technology review, and policy review, span of control, planning, scheduling, and resource needs. Work load and budget analyses were

accomplished. Using narrow scope benchmarking LAC investigated the County's efficiency and effectiveness as compared to other agencies. A geographical analysis researched the County's opportunities to reduce operational costs by consolidating redundant operations and maintenance yards. Implementation of new management methodologies and extensive training of County staff were envisioned for the next phase of the project. Over \$1.4 million in improvements were identified and accepted by both management and union staff. Further, an independent audit of the project indicated the actual savings generated were closer to 6 million dollars!

This project's success was highlighted by an article in the April 2001 APWA magazine, and presented at the National APWA conference in Louisville in 2002.

- (8) **Project:** Implement a Maintenance Management System
Client: Reno, NV
Contact: Mr. Steve Varela, Director of Public Works, (775) 334-2215
LAC Staff: H. Lorick, G. Gowans, A. Drotning
Date: 8/1/95 - 2/96 ; 6/00 -11/02

LAC evaluated city maintenance operations, documented work methods and established an automated maintenance system for sewer, storm and building facilities. Effort included joint development of work method improvements for operations. LAC trained 60+ staff and assisted Public Works staff to complete an annual plan for operations and maintenance in 1995-6 and 1996-7 to better manage maintenance for sewer, buildings and drainage facilities. This project success was documented in Public Works Magazine in May 1998.

Further support in 200-2002 has been done to transition one automated system software to another with a minimal effect on operations.

- (9) **Project:** Maintenance Systems Review Assessment/Implementation
Client: Hernando County, FL
Contact: Mr. Steve Whitaker, Asst. Director of Public Works
Phone: (352) 754-4060
Staff: H. Lorick, N. Nguyen
Date: 6/99 - 12/99

LAC evaluated County wide roadway operations, documented the current system adequacies and established a systematic approach to evaluate the road and traffic facilities. The work included an assessment of a 1,595 road-mile, 51 buildings, and eighteen parks system and determination of the adequacy of the system. Recommendations were made and unanimously approved by BCC. Over \$500,000 in annual savings are documented in a final report. LAC has also been retained to implement a complete infrastructure management system. The County continues to see improvements. The success of this project was documented in 2002 article in APWA and

also in Florida Counties. Further, the success was highlighted in the local newspaper, *The Hernando Today* (June 21, 2001), indicating the savings that occurred. Further, an independent audit by the Hernando County Clerk of the Court in 2002 confirmed the project's success and statement of improvement.

- (10) Project: Seminole County Evaluation and MMS
Client: Seminole County, FL
Contact: Mark Flomerfelt, Division Manager
Phone: (407) 665-5710
LAC Staff: H. Lorick, A. Drotning
Date: 7/00-01/03

LAC completed a review and evaluation of Road, Stormwater and Traffic operations for the County and made recommendations for improvements. The recommendations were documented in a final report. Using information collected during the evaluation process, LAC assisted in the implementation of a maintenance management system for the County.

Additional projects LAC has performed include implementing the use of handhelds (PDAs) to assist operations in being more effective and efficient and the setup of inventory control to work with the maintenance system. LAC is currently in the process of implementing a GIS interface to work with the existing MMS.

- (11) Project: Implement a Maintenance Management System
Client: Washoe County
Contact: Mr. Rodney Savini, P.E., Manager of Road Operations and Maintenance.
Phone: (775) 334-2215
LAC Staff: H. Lorick, G. Gowans, A. Drotning
Date: 8/1/95 - 2/97

LAC evaluated city maintenance operations, documented work methods and established an automated maintenance system for road operations for operations in Truckee Meadows area. Effort included joint development of work method improvements for operations. LAC trained 100+ staff and assisted Public Works staff to complete an annual plan for operations and maintenance in 1995-6 and 1996-7 to better manage maintenance for road operations. This project success was documented at Nevada APWA conference.

LAC is now providing additional training on system usage for new staff and another division in a remote yard.

D. MMS EXPERTISE

LAC Staff has specific and unique experience with maintenance management software for all aspects of Public Works, including roads, traffic, storm water, sewer, water, buildings and parks. The following is a summary chart of similar projects showing our maintenance experience in each function.

Infrastructure Experience

	Government Agency	Roads	Traffic Signals	Signs & Striping	Flood Control	Fleet
1.	Alameda County, CA	✓	✓	✓	✓	✓
2.	Charlotte County, FL	✓	✓	✓	✓	
3.	Clark County, WA	✓	✓	✓		
4.	Contra Costa County, WA	✓		✓	✓	
5.	Hernando County, FL	✓	✓	✓		
6.	Regional Transportation Commission, NV	✓	✓	✓	✓	
7.	San Diego County, CA	✓		✓	✓	
8.	Seminole County, FL	✓	✓	✓	✓	
9.	Washoe County, NV	✓		✓	✓	

LAC expends considerable effort and research monitoring software available for the industry, and in fact, LAC regularly interviews software vendors and tests software as well as observe software at trade shows and various agencies. LAC does not have contractual or agreement or preference in the software that should be used. LAC also has been involved with agency IT staff to develop capabilities on an internally developed system.

LAC staff have worked directly with the following maintenance management systems:

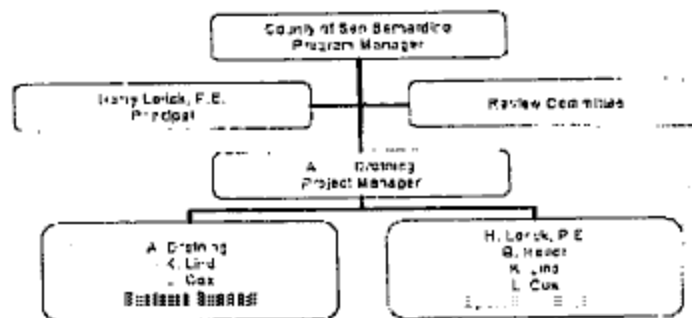
- MaintStar – Bender Engineering, Los Alamitos, CA
- Burke DSS – Burke & Associates, Aurora, CO
- GBA Master Series – Kansas City, MO
- Complete Street – Cititech Systems, Rapid City, SD
- CarteGraph – CarteGraph Systems, Dubuque, IA
- Hansen technologies – Sacramento, Ca
- MP-3 - DataStream – Greenville, SC
- Stantec/TTX – Phoenix Arizona
- Cartigraph – Dubuque, Iowa

The software above is just those that LAC has recently worked and is not to be all inclusive other products have been observed and reviewed (MRO, Sussex, Excor, etc). LAC has no recommendation on any product we assist agencies to help best match to agencies needs.

E. PROPOSED STAFFING

PROPOSED PROJECT TEAM

The staff proposed for this project includes a team pf employee with considerable background. The organization is shown below with breakdown of their background shown in chart below. A capsule resume and detail ones are attached.



SUMMARY OF STAFF BACKGROUND

	Education	Experience	
		Years	System/Reviews
H. Lorick	BSCE, MSCE, MBA	32	50
G. Gowan	BSCE	35	25
N. Nguyen	BSCE, MBA	8	9
A. Drotning	BS	14	18
B. Reiter	AS	38	7
K. Lind	BA, MPA	2	4
L. Cox	BA	1	1

MR. HARRY C. LORICK
Principal

Mr. Harry C. Lorick, a Principal for LAC, has 32 years experience in management, engineering, computer applications and training and is a registered civil engineer. He has evaluated and implemented maintenance systems for governmental agencies throughout the United States and several foreign governments. In addition, he designed and implemented the first microcomputer based maintenance management system for Orange County's Public Works Department, a system that has been operating for nearly 15 years. Further, he was responsible for the evaluation and/or implementation of management systems for the Counties of Alameda, Ventura, Orange, and Ventura, California and Seminole, Hernando and Charlotte Counties, FL; the Roads and Traffic Authority of New South Wales, Australia, Rocky Mountain National Park and the County of Denver, Colorado. He assisted on similar projects in the Cities of Reno and Sparks Nevada, South Gate and Fremont, CA. He also assisted in the development of a state of the art system in New South Wales, Australia and a nation-wide study of the FHWA's Federal Lands and Highways Section. In addition, he is the author of many articles on roadway maintenance and is often a speaker at APWA and MSA events.

His role in this project will be to provide overall guidance of the entire project and to lead the review and evaluation of the County's maintenance operations.

MS. AMIE DROTNING
Consultant (Systems Project Manager)

Ms. Drotning's fourteen years of experience includes MMS implementation and training for several cities and counties and utilization of various management and scheduling systems for controlling both private and public organizations. She has a computer background in scheduling systems such as Primavera, Microsoft Project and Timeline, and has utilized database programs such as Foxpro, Dbase IV, Microsoft Access and SQL Server. She has experience in operating MMS Systems for sewer, water, buildings, flood, parks and road applications. She has managed complex MMS implementations in Orange County (CA), Southgate (CA), Santa Clarita (CA). She has been involved in the evaluation and implementation of maintenance systems for Cypress (CA), Carson (CA), Fremont (CA), Seminole County (FL), Charlotte County (FL), Washoe County (NV), Reno, (NV) and Sparks (NV). Her role will be to manage the systems aspect of the project, provide systems analysis and implementation support to the County.

MR. BILL REITER
Consultant (Operations Review & Implementation)

Mr. Reiter has over 38 years of professional experience in road, flood and infrastructure maintenance and systems. He formally served as manager of the Environmental Management Agency/Public Works Operations of the County of Orange. Mr. Reiter's responsibilities included 561 road miles, 310 miles of flood control channels and support for a 14,600-acre park system. The county also at that time provided contract support to four cities that Mr. Reiter managed. Mr. Reiter is a leader in the use of systems for maintenance and was instrumental in the utilization of one of the first PC based MMS systems in the United States (1981). He also developed a complete PMS for the County in 1983. Mr. Reiter has been involved in reviews for several public works agencies (Contra Costa, San Mateo, City of Orange, City of Pleasanton, and Alameda County) in an effort to improve the efficiency and effectiveness of the departments' activities. His role will be to provide a review of field operations and assistance and training.

MR. KURT B. LIND
Consultant (Operations Review & Systems Support)

Mr. Lind's experience includes developing plans and databases for various MMS projects, conducting research and assisting with writing system review reports. He has developed plans and databases for MMS projects for Contra Costa County, City of Orange, Seminole County, City of Pleasanton, City of Reno, and San Mateo County. Mr. Lind's role will be to provide systems analysis and implementation support.

He has a degree in Political Science and is a candidate for a Master of Public Administration degree at California State University at Fullerton. He has working experience with Orange County Sanitation District and was involved in their safety training program.

MS. LYDIA M. COX
Consultant (Operations Review & Systems Support)

Ms. Cox has experience working with a county to be approved for APWA accreditation. She has assisted in the managing of Alameda and Orange County's system databases as well as performing an operations review for various agencies. She has experience working with various software applications and database programs, which include FoxPro, Access, and FileMaker Pro. Her role will be to assist in establishing any automated processes, documenting all standards and assisting in the operations review. She has a degree in Economics from the University of San Francisco.

MR. NICHOLAS T. NGUYEN
Consultant (Backup Systems Support)

Mr. Nguyen is a registered professional engineer with experience in capital improvements, construction and maintenance management implementation. He has done field evaluations of maintenance in San Diego County (CA), Orange County (CA), Reno (NV), and Ontario (CA). He has conducted management analyses for the counties of Alameda (CA) and Hernando (FL). He has managed or has been involved in the implementation of numerous maintenance and asset management systems, including Fremont (CA), Carson (CA), and Hernando County, (FL). Further, he has managed construction for roadway, traffic and other infrastructure projects. He was the project manager for a \$3.6 million dam reconstruction project requiring multi-agency coordination. He has the local government background and knowledge of working in municipal environments as well as construction and maintenance specifications and testing requirements. His effort will be to provide backup technical support of this project.

STAFF RESUMES

HARRY C. LORICK

Principal

EDUCATION

M.S.C.E., University of Florida, 1981
M.B.A., University of South Carolina, 1973
B.S.C.E., University of South Carolina, 1972

LICENSES

Professional Engineer -- Florida No. 25522
-- North Carolina No. 12882
-- South Carolina No. 10921
Civil Engineer -- California No. 34060
Traffic Engineer -- California No. 1206
Profession Traffic Operations Engineer - No 254 - Initial group by ITE certified in 1999
Certified Bridge Inspector and Cal OCES Certified Disaster Service Worker
CELSOC 1994 - 2001 Continuing Education Program
Completed APWA Management Program in Public Works Assessment

EXPERIENCE SUMMARY

Mr. Lorick has 30 years of both operational and consulting experience in engineering and maintenance. He has served in the public sector as a City Traffic Engineer, Assistant County Engineer, DOT Design Engineer and Deputy Director of public works. In his consultant experience, he has considerable expertise in maintenance systems for public agencies. His assignments include: performing organizational reviews and performance audits, designing and implementing MMS and PMS management systems; conducting training needs assessments; and serving as program manager on both infrastructure design and construction projects. He has managed projects for various State and local agencies. In addition, he has lectured at Cal Poly Pomona in civil/transportation and worked at the T² Center at the University of Florida.

WORK HISTORY EXPERIENCE

- Mr. Lorick has performed operational reviews, performance audits and organizational assessments for such agencies as the Federal Highway Administration, California Department of Transportation, Regional Transportation Commission in Reno, NV, the National Park Service, the Roads and Traffic Authority of New South Wales, and several cities and counties (Sonoma, Contra Costa, San Diego and Orange) throughout the US.
- Mr. Lorick is project manager for implementation of a MMS for four Nevada agencies simultaneously -- City of Reno, City of Sparks, Washoe County, and Regional Transportation Agency. This includes development, design, implementation and training for roadway, drainage, sewer, buildings and traffic maintenance. Over 300 people are being trained as part of this project for best management and continuous improvement practices.
- Mr. Lorick has been involved in the design and implementation of 50 management systems involving maintenance and operations management. Agencies where these systems have been implemented include the Roads and Traffic Authority of New South Wales, the National Park Service, Alameda, Orange and Ventura Counties in California, Hernando, Seminole and Charlotte Counties in Florida, Union and Essex Counties in New Jersey.

- Mr. Lorick worked with top management officials in developing policies related to pavement management -- including the identification and prioritization of pavement repair and rehabilitation strategies. These agencies included such organizations as the cities of Sacramento, California; Denver, Colorado; Miami, Florida; Rancho Palos Verdes; and Huntington Beach, California and the County of Orange, California.
- For CALTRANS, Mr. Lorick developed a maintenance station location decision model that will optimize the location of maintenance stations based on such criteria as the value of travel times, fuel and maintenance costs, value of land, replacement of facility and equipment costs and overhead costs associated with operating a maintenance station.
- Mr. Lorick assisted in the preparation of the system design for three different MMS systems that are being used in over 300 locations and six PMS systems. In fact, he implemented one of the first MMS microcomputer systems in 1981 for Orange County, California and the initial MMS used a pilot project in Colorado for all US National Parks in 1984. Mr. Lorick has designed and programmed software applications for such projects as PMS for Huntington Beach, MMS for Orange County and Rocky Mountain National Park and a Maintenance Station Location model for CalTrans.
- Mr. Lorick has served as project manager for developing and using transportation models in such urban areas as Orlando, Daytona Beach and Cocoa Beach Florida as well as the Raleigh-Durham-Chapel Hill areas. These studies required estimating demand for 20 years and evaluating the consequences to the transportation network, then preparing a complete model solution using a combination of highway and transit alternatives.
- Mr. Lorick has managed such transportation projects as a 15-mile corridor study for the Conway Bypass in South Carolina, the Environmental Impact Statement for the Myrtle Beach Connector (a 45-mile freeway), and an Environmental Impact Statement for an extension to the Florida Turnpike (a 43-mile freeway).
- Provided technical training and assistance for road maintenance and planning to several foreign governments such as Malawi, Peru, Jordan and Australia. As Assistant County Engineer for the County of Alachua County Florida, Mr. Lorick directed the effort of 120 employees in the public works department.
- Mr. Lorick has computer software and database programming background such as COBOL, RPG, Basic, ASSEMBLER, DBase, FoxPro, Rbase and FORTRAN. Also, he has provided Internet applications training to both public and private entities.
- Mr. Lorick is a part-time lecturer of Transportation Engineering at Cal Poly and is the author of numerous articles on maintenance and operations systems including ten on roadway maintenance in for American City and County, Public Works, Better Roads, and Roads and Bridges.

PROFESSIONAL AFFILIATIONS

Institute of Transportation Engineers
 American Society of Civil Engineers
 National Society of Professional Engineers
 City and County Engineers Association
 Institute for Advancement of Engineering

Society of Military Engineers
 American Public Works Association
 American Public Transit Association
 Consulting Engineers and Land Surveyors of
 California (Board member)
 Maintenance Superintendents Association

AMIE DROTNING

Consultant

EDUCATION

California State University - Fullerton, CA -BA Management

EXPERIENCE SUMMARY

Ms Drotning's twelve years of experience includes MMS and work methods implementation, utilization of several management and scheduling systems for controlling both private and public organizations. She has computer background in scheduling systems such as Primavera, Microsoft project and Timeline and has utilized database programs such as Foxpro, Dbase IV and Access. She has experience in operating MMS Systems for road and flood operations and other applications.

WORK HISTORY EXPERIENCE

MMS IMPLEMENTATION

- Operates MMS on site for Orange County Public Facilities and Resources Department/Operations and Maintenance, including development of activity guidelines, preparing annual plans, weekly schedules and monthly status reports. Attends staff meetings and assists staff in utilization of MMS information. Prepares annual work programs for five contract cities in Orange County.
- Implemented a maintenance management system in the City of South Gate, California. Implementation included setup and training of MMS computer software, preparation of activity guidelines, determination of work quantities, production of an annual plan and costs and monitoring of scheduling meetings.
- Assisted in the implementation of an MMS system for the Building Maintenance Department of the Washoe County Regional Transportation Commission. The implementation included preparing activity guidelines, setup and training of MMS computer software, monitoring scheduling meetings, and preparing annual budgets and balancing workloads of all resources.
- Assisted in the implementation of an MMS system in the City of Reno, Nevada for roads, traffic, sewer, and buildings. The implementation included preparing activity guidelines, setup and training of MMS computer software, monitoring scheduling meetings, and preparing annual budgets and balancing workloads of all resources.
- Assisting in the implementation of an MMS system in the City of Sparks, Nevada for the Road, Sewer and Traffic Departments. The implementation included preparing activity guidelines, field reviews of maintenance crews, setup and training of MMS computer software, monitoring scheduling meetings, and preparing annual budgets and balancing workloads of all resources.
- Implemented an MMS system for the Road Department in Washoe County, Nevada. The implementation included preparing activity guidelines, setup and training of MMS computer software, monitoring scheduling meetings, and preparing annual budgets and balancing workloads of all resources.

PROJECT ADMINISTRATION/CONTRACT ADMINISTRATION

- Ms. Drotning has organized and maintained a project status reporting system; prepared invoices and budgets, monitored expenses, updated project schedules and prepared project status reports for over 100 concurrent design and construction projects.
- Performed contract administration services for the California Department of Transportation and OCTA for two major construction projects. Duties included preparation of contract change orders, monthly progress pay estimates to the contractor, weekly statements of job progress, closures and input of daily extra work reports for payment.

PROJECT SCHEDULING

- Assisted in the development of project design schedules using Primavera Project Planner for various public agencies including: LA County Department of Public Works, City of Yorba Linda, City of Anaheim and City of Hesperia.
- Operated Timeline scheduling system to monitor four engineering offices design and construction projects and made estimates of manpower requirements. Effort involved coordination with over 30 project managers for 100+ concurrent projects monitoring schedule and budgets.

MANAGEMENT/FINANCIAL ANALYSIS

- Assisted officers in various companies in the preparation and analysis of yearly and monthly business plans, budgets, status reports and staff schedules; monitored overhead costs and researched methods to reduce costs.
- Prepared cost estimates, including coordination of the project team and sub consultants, preparation of exhibits, project schedules and fee estimates.

PRESENTATION GRAPHICS

- Prepared graphic layouts for presentations, reports, trade shows and seminars using computer illustration and layout programs using a host of software such as Persuasion, Power point and Harvard Graphics.

PROFESSIONAL AFFILIATIONS

American Public Works Association
Woman Transportation Coalition

BILL REITER

Field Observations support

EXPERIENCE SUMMARY

Mr. Reiter has over 38 years of professional experience in road, flood and infrastructure maintenance and systems. He formally served as the manager of the Environmental Management Agency Public Works Operations of the County of Orange, the most dense county in the state. Mr. Reiter's responsibilities included 561 road miles, 310 miles of flood control channels and support for a 14,600 acre park system. The county also at that time provided contract support to four cities that Mr. Reiter managed. Mr. Reiter is a leader in the use of systems for maintenance and was instrumental with the utilization of one of the first PC based MMS systems in the United States (1981). He also developed a complete PMS for the county in 1983. He has received recognition with awards from the National Association of Counties and he is often a speaker on maintenance and emergency response, including the APWA annual meeting and the Transportation Research Board special meeting on maintenance systems.

WORK HISTORY EXPERIENCE

- Mr. Reiter's has assisted in the reviews of several public works agencies (Contra Costa, San Mateo, Santa Clara and Cities of Orange and Pleasanton, and Alameda County) in an effort to improve the efficiency and effectiveness of the departments' activities.
- Mr. Reiter has quality controlled pavement inspection for many cities and counties including Santa Monica, Ontario, Fairfield, Orange and Pleasanton in 2001-2.
- Mr. Reiter's accomplishments include assisting in the development of the Southern California Mutual Aide Agreement in which nearly 100 local agencies joined together to allow public works agencies to assist each other in an emergency. His leadership has allowed the County to develop a complete Federal Emergency Management Agency/State Office of Emergency Services approach and documentation process. This is regarded as the prototype in processes and emergency response.

He has written several articles on the use of management systems and governmental service response.

PROFESSIONAL AFFILIATIONS

Mr. Reiter has affiliated with the following associations and committees.

Maintenance Superintendents Association of Southern California
American Public Works Association
Orange County Traffic Safety Committee
Local Orange County Equipment Services Committee

KURT B. LIND

Consultant

EDUCATION

1999 BA Political Science- California State University, Fullerton

Candidate for Master's Degree in Public Administration- California State University, Fullerton

EXPERIENCE SUMMARY

Mr. Lind's experience includes developing plans and databases for various MMS projects and providing assistance with writing system review reports. He has also conducted research and assisted with writing reports on a variety of topics including concrete white topping, performance management, GASB 34, and ROW utility cuts. Mr. Lind has also conducted research on various state and federal laws and proposed laws pertaining to public works operations and storm water management. He has assisted on a variety of projects with analysis of fleet, road, and park maintenance systems. Mr. Lind has worked for the County of Orange, Public Facility & Resources Department and the Orange County Sanitation District, Department of Emergency Management.

WORK HISTORY EXPERIENCE

- Developed plans and databases for MMS projects and assisted with writing systems reports for Contra Costa County, City of Orange, Seminole County, City of Pleasanton, City of Reno, and San Mateo County, Santa Clara County, and City of Fairfield.
- Research includes various California Regional Water Quality Control Board decisions, various California Codes and Acts, various federal and state EPA laws and regulations.
- Assisted with fleet, road, and park operations analysis for the City of Orange, City of Pleasanton, San Mateo County, Seminole County, Santa Clara County, and City of Fairfield.
- Assisted with PMS field work for the City of Santa Monica.
- Conducted pavement markings inventory for the City of Laguna Hills.

PROFESSIONAL AFFILIATIONS

American Society for Public Administration
American Public Works Association

Lydia Cox
Consultant Assistant

Education

University of San Francisco - BA Economics 2002

Experience Summary

Ms. Cox's experience includes working with a county working to be approved for Accreditation by the American Public Works Association. She maintained accurate records of which practices the agency had completed and organized and facilitated meetings with division heads to document the agencies practices and ensure accreditation. Ms. Cox also helped write a county ordinance for graffiti abatement. She has assisted on the operations review for County and City Agencies. Other experience includes working for a consulting firm for two years. While there Ms. Cox supported senior staff with a variety of projects. Her computer skills include a working knowledge of Fox Pro, PowerPoint, Access, File Maker Pro, and Excel.

Work History Experience

- Helped county be approved for APWA Accreditation
- Interviewed department/division heads and helped assess their completion of APWA practices
- Created an employee brochure of frequently asked questions regarding APWA Accreditation process
- Assisted in writing county graffiti ordinance
- Created an employer database using FileMaker Pro for University of San Francisco Career Services Center
- Performed operations review for County Fleet and City
- Created PowerPoint presentation of various county MMS systems, technology, and storm water management for APWA conference

NICHOLAS T. NGUYEN
Sr. Associate

EDUCATION

M.B.A., McLaren School of Business, University of San Francisco, 1998
B.S.C.E., California State Polytechnic University, Pomona 1992

LICENSES

California Professional Engineer License (No. C054442)
CalTrans certified materials tester
Completed APWA Management Program in Public Works Assessment

EXPERIENCE SUMMARY

Mr. Nguyen, a professional engineer, has over seven years of experience managing projects for state and local governments. He has assisted in a variety of management system implementations and reviews. His role as project manager and field evaluator for several management consulting projects has facilitated the overall process and helped agencies understand the value in improving their operations. His other background includes roles as designer, construction and project administrator. Further, he has been involved in labor negotiations and has dealt with labor disputes and resolutions. He has a working background in CADD for Microstation and AutoCAD.

- Manage and assist in the reviews of several public works agencies (Hernando County, FL, San Diego County, CA, City of Carson, CA, City of Fremont, CA) in an effort to improve the efficiency and effectiveness of the departments' operations. These reviews include the implementation of management systems that utilize activity base costing, total quality management, focus groups, and continuous improvement concepts to achieve financial and quality improvements. Interface with senior managers to determine organizational needs, and to define goals and missions for the future.
- Evaluate workflow and methods of various maintenance departments in northern and southern California and Florida. Efforts include field observations, interviews with key staff, analysis of stakeholders, analysis of resources, documentation of findings and preparation of recommendations.
- Employ technical expertise with management knowledge and communication skills to effect change in organizations that are highly resistant to adapting to evolving environments. Facilitate consensus building and focus groups to generate acceptance and adoption of new plans and methods.

- Assist in the implementation of software systems that would help improve the management of agencies' operations. Efforts include software review, assistance with installation, training in the usage, and training in the interpretation of reports.
- Conducted field assessments for maintenance and rehabilitation for several cities and counties. Prepared technical evaluations for various maintenance and public works agencies in California.
- Prepared Design Plans, Specifications and Estimates (PSE) for major public works projects. Performed construction inspection for public works throughout the State of California. Background in use of CADD packages and associated software in plan production including Integraft and Auto/Cad/SoftDesk systems.
- Managed complex multi-agency projects such as the Crystal Springs Dam Bridge Replacement Project, a \$3.6 million structural project this included all environmental processing and project coordination.
- Participated in various asset management projects, such as the Pavement Management System implementations for Orange County, Ontario, Huntington Beach, and Santa Ana (California).
- Experience in using financial analysis tools to maximize asset value and improve cash flow, including implementing cost control measures. Capable of researching new opportunities for organizations using NPV, IRR, and ratio analysis.
- Participated in collective bargaining agreement and negotiated contracts with county and employees union.

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers
Maintenance Superintendent's Association

American Public Works Association
Engineering and Technology Committee

F. UNIQUE QUALIFICATIONS

Our LAC project team members have the necessary experience, technical knowledge and skills to ensure a successful implementation of the maintenance management system. The staff that we present here is our proposed engagement team from which the Principal and Project Manager will not deviate. Some other unique qualifications of LAC's firm and staff include:

- All employees have worked in a maintenance with an average of over 20+ years of experience per professional in evaluating rehabilitation and maintenance operations and an average of 20+ implementations or reviews.
- all degreed professionals with majors in such focused areas as resource management, civil engineering and business administration.
- a proven track record of training literally thousands of maintenance workers and managers in the use of repair and maintenance standards and supporting software applications in over 200 sites.
- All LAC clients have selected to retain LAC for multiple projects.
- Multiple software background unparalleled by other consultants allows for unbiased approach to automations.
- Ability to not only implement but to implement with result of improving operations.
- Firm has presented more topics (13) at national APWA conferences than any other agency or firms in the nation in the last three years. Further, LAC has presented at four state annual APWAs and at several MSA annual conferences.
- Prepared four articles for national public works magazines on maintenance. Several are included in the appendices.

Based on our experience in evaluating maintenance operations and implementing maintenance systems, we know the key to a successful evaluation and implementation effort is the quality of professionals used for the work.

G. REFERENCES

Government Agency	Contact Name	Phone Number	Date Services Provided	Address
Orange County	Ms. Carol Gracher, Mr. Bill Tidwell, O&M Manager	(714)567-6300	10/1/94-3/96, 1/97-6/00, 7/00 - present	1750 S. Douglas Rd. Anaheim, CA 92806
Seminole County	Mr. Mark Flomerfelt, Road Operations & Stormwater Manager	(407)665-5710	10/1/00 - present	520 W. Lake Mary Blvd Suite 200 Sanford, FL 32773
Contra Costa County	Greg Connaughton, Assistant Public Works Director	(925)313-7000	7/1/00 - present	2475 Waterbird Way Martinez, CA 94553-1457
Alameda County	Mr. Rick Ruiz, Deputy Director	(510)670-5506	9/1/96-6/1/97, 8/1/98-Present	951 Turner Ct. Hayward, CA 94545
Clark County	Mr. Bud Cave Operations Manager	(360)397-2446	8/00-11/02	1700 NE 78 th Street Vancouver, WA 98065
Regional Transportation Commission	Mr. Derek Morse Asst. Director of Operations	(775)348-0400	3/1/95-2/96	2050 Villanova Dr., Suite 108 Reno, NV 89502
Charlotte County	Mr. Ray Sandrock Finance Mgr of Public Works	(941)575-3600	6/97-10/98	7000 Florida St., Punta Gorda, FL 33950
Hernando County	Mr. Charles Mixson (Director of Public Works)	(352)754-4060	6/99-12/99	201 W. Summit Rd. Brooksville, FL 34601

H. FINANCIAL INFORMATION

IAC is a privately held company, with no long term debt. We are proud of the fact that our revenue and profitability have increased steadily over the past ten years. As a privately held company we do not publish financial statements. We can put you in contact with our accountant if required. We are enclosing our tax returns and our non public financial statements for a two year time period.

Confidential Information in Section 3, Pages 25 to 116 is not shown in this document.

Section 4

Mandatory Requirements



ATTACHMENT B- MANDATORY VENDOR REQUIREMENTS

The following requirements apply to all prospective vendors:

	Requirement	Agree (initial)	Agree with qualification (initial and attach explanation
1.	Provide resumes of key personnel who have at least five (5) years of continuous experience in providing maintenance management system consulting services to large employer groups, including some experience in the public sector.	<i>HL</i>	
2.	Provide five (5) references (Attachment E) from other public works agencies that you have established a contract with on a project of this nature, of same or similar size as the County. Provide Government Agency, Contact Name, Address, Phone Number, and dates services were provided.	<i>HL</i>	
3.	Meet other presentation and participation requirements as stated in Section VII, paragraphs C and D	<i>HL</i>	
4.	Have no outstanding or pending complaints as determined through the Better Business Bureau and State of California Department of Consumer Affairs, and have no unsatisfactory record of performance with any public agency.	<i>HL</i>	

SIGNED: 

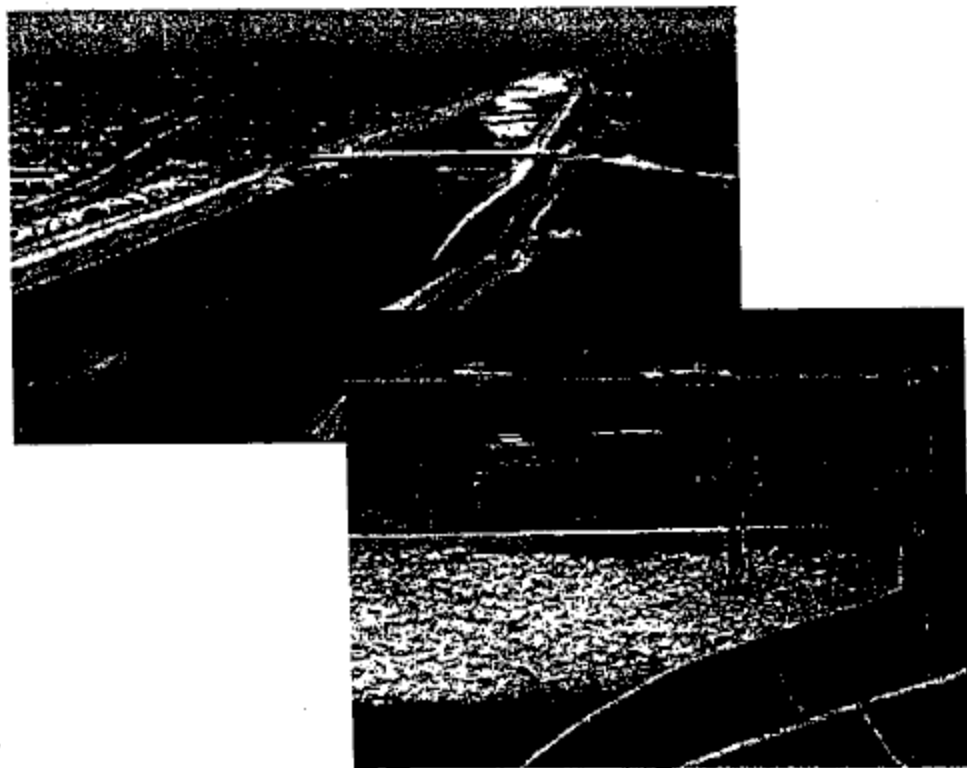
PRINT NAME: Harry Lorick

TITLE: President

DATE: 12/20/02

Section 5

Exceptions to RFP



County of San Bernardino
Purchasing Department

Request for Proposal
Maintenance Management System
Review

RFP No. PUR02-08
November 2002

ATTACHMENT C - EXCEPTIONS TO RFP

SAN BERNARDINO COUNTY PURCHASING DEPARTMENT
Maintenance Management System Review

PROPOSER NAME LA Consulting
ADDRESS 1209 Manhattan Ave, Suite 310
Manhattan Beach, CA 90266
Telephone# (310) 374-5777 Fax# (310) 374-5557

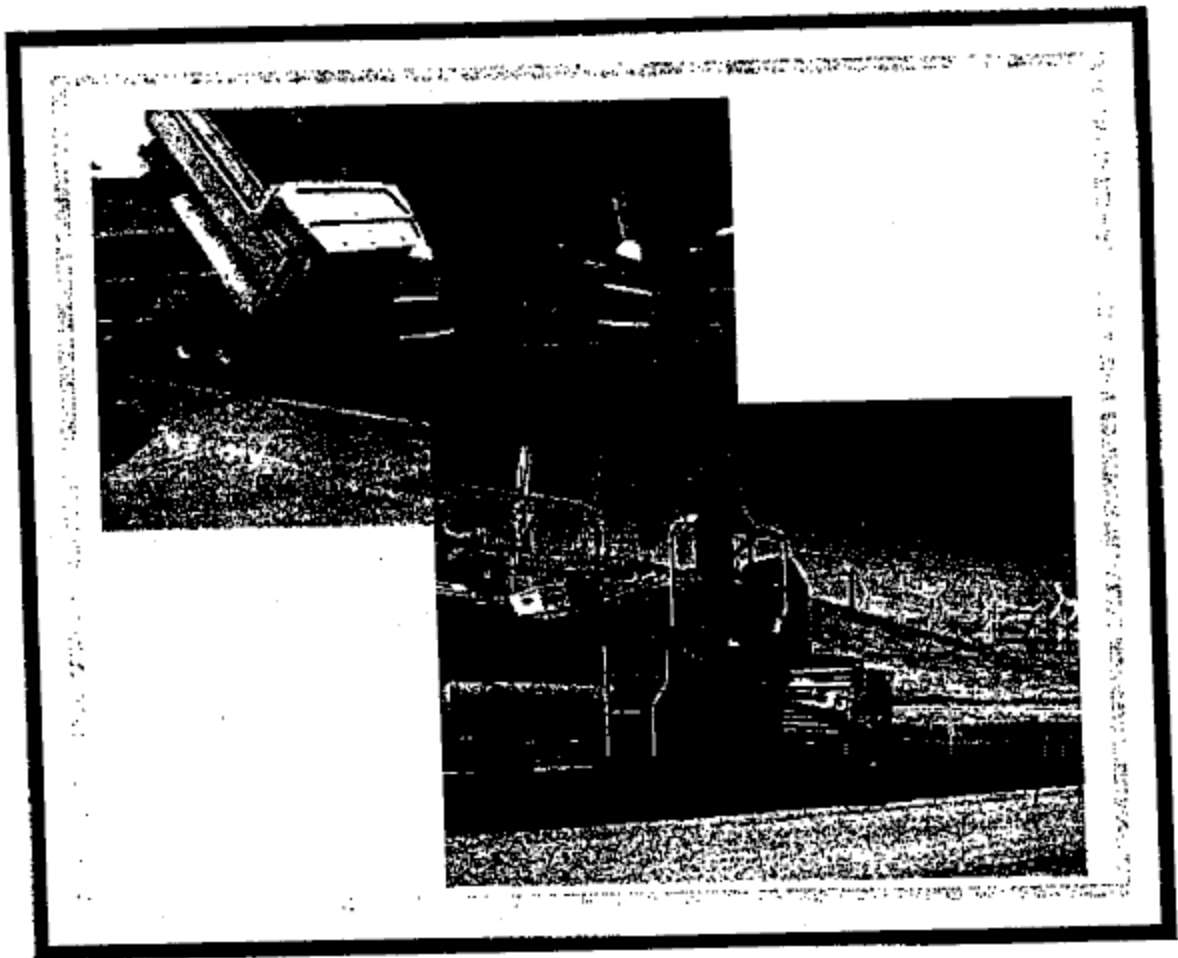
I have reviewed the RFP and General Agreement Terms in their entirety and have the following exceptions: (Please identify and list your exceptions by indicating RFP, the Section or Paragraph number, and Page number, as applicable. Be specific about your objections to content, language, or omissions. Add as many pages as required)

Name of Authorized Representative Harry C. Lorick
Signature of Authorized Representative [Signature]
Date 12/20/02

1. Section V, 10, page 9 Termination for Convenience – We request a similar right for LAC to terminate as the County or optionally to be given a minimum of two-week (14 day) notice. Not only is this what most agencies utilize, but our work requires onsite effort in the County with considerable planning, data collection and coordination that would be required to properly allow us to return to our office and provide and release information to the County. This is similar to other contracts with counties.
2. Section V, 2B Indemnification – We suggest removal of the phrase “any cause, whatsoever” from lines 3- 4. We are more will to be responsible for any error or omission but seems inappropriate for LAC such to assume risk that not result of any effort or action of LAC.
3. Section V, 2c, Errors and Omission Liability Insurance – We suggest removal. Errors and Omissions insurance is related to design and construction services. We have general liability, auto and workmen’s compensation coverage that meet all of our current client’s management consulting requirements. This is all the coverage that our clients, such as Alameda County, Contra Costa, or Orange County require. We are not designing or directing a construction project, but guiding staff through a management consultant effort, thus professional errors and omissions coverage is not needed.

Section 6

Scope of Work & Cost



SECTION 6

SCOPE OF WORK AND COST

MAINTENANCE MANAGEMENT EVALUATION

WORK PLAN

The approach is outlined to include two phases. Phase 1 encompasses 5 tasks and 17 sub tasks and Phase 2 encompasses 5 tasks.

Phase 1 – Investigate and document current operation - identify opportunities to improve in all identified aspects of maintenance operations (e.g. organizational structure, labor and equipment usage, technology needs, asset management, work effectiveness, and work efficiency).

Phase 2 Guide County in selecting appropriate maintenance and asset management software.

The detail tasks are defined and given for Phase 1 and 2. The description of each of these tasks follows. These descriptions include the process, methods and procedures to be used, and the end product that can be expected from the task.

STUDY APPROACH

Successful completion of this comprehensive maintenance study is dependent on successful interaction and participation between LAC and the County personnel, as well as LAC's background and experience. The work plan has been developed to ensure effective and interactive communication -- leading to a comprehensive result that reflects the true maintenance needs of the Department of Public Works road and flood maintenance operations.

PHASE 1 - PRELIMINARY INVESTIGATION

This phase of our work plan will establish a solid foundation on which the efforts of the study can be built. The objective of this phase is to convey a sound understanding of the methods that will be used to collect and analyze maintenance information, establish working relationships and committees, and coordinate LAC and County resources, as well as develop working relationships.

TASK 1 PROJECT INITIATION

The following tasks are intended to familiarize the County staff with the approach that LAC will take to improve the maintenance operation within each division. The tasks will also serve to educate LAC on the work processes and features found in the County.

TASK 1.1 - PROJECT STARTUP

During this first task, we will begin our team planning efforts associated with the project. LA Consulting (LAC) will initiate the project immediately after the contract is signed. LAC staff will conduct initial meetings with the Directors of Public Works along with Road and Flood Division Managers of the County of San Bernardino to review the County's objectives and their perception of the approach to the work methods and procedures that are needed to compile and analyze maintenance information.

Structured interviews will also be conducted with Road, Traffic and Flood Division staff, including maintenance supervisors, the computer services manager and various other staff that have an impact on the control and directing of maintenance and implementation of software. Information and ideas on current aspects of the maintenance system will be obtained which are positive and negative along with concepts for enhancements. The objective of these sessions is to develop working relationships with key staff and a general understanding of each of the objectives. Meetings will be held to further refine our approach, work plan, and methodology to effectively accommodate the specific needs and desires of the County.

End Product: Key County staff will be consulted and concepts for improvements and enhancements will be prepared.

TASK 1.2 - PREPARE DETAILED WORK PLAN

Based on our system observations and discussions in the initial task, LAC will prepare detailed work plans along with proposed training and system enhancements. The tasks will be further defined with milestone changes if the information obtained from Task 1 warrants.

End Product: A detailed schedule with training and enhancements planned.

TASK 1.3 - ESTABLISH A REVIEW COMMITTEE

To ensure an effective program, operational effort and credibility with all levels of the organization, a Review Committee will be established. The group, comprised of management staff of various maintenance personnel, shall be updated at major milestones and provide direction to LAC. In addition, the committee will periodically review progress and accomplishments and provide LAC with guidance and counsel. The committee members will develop a firsthand understanding of the system developments as they are documented and presented. This method will promote a sound understanding of the analysis process and ensure the credibility of the findings and recommendations of LAC.

It is recommended that the County appoint an in-house coordinator to work closely with LAC. This individual will assist in researching and compiling required maintenance data and act as a liaison between the Committee and LAC.

The committee will consist of selected field and office operational personnel and key County staff. They will work with the project team on the current system status, overall system concepts and propose improvements or new enhancements.

End Product: A Committee and study coordinator appointed to work with LAC to ensure study credibility and assist in data research.

TASK 1.4 - CONDUCT ORIENTATION

In order to establish a uniform understanding of the system and LAC's role between the Committee and the project team, a general orientation session will be conducted during the second week of the project. During this meeting, LAC will describe in detail our proposed approach, our schedule, and identify any potential problems. In addition, a review of a systematic approach will be given to all Committee members along with what maintenance data will be researched and compiled and the results and benefits that can be expected from the implementation. In addition, the participants will identify contacts that will assist in compiling the Maintenance database.

End Product: A uniform understanding between staff participating in the study and LAC as to the project objectives, work methods, and schedule.

TASK 2 - DATA COLLECTION

After a review committee has been setup and orientation meetings have taken place, LAC will begin collecting data on all aspects of the County's current maintenance operation. This will be done in a series of sub-tasks described below.

Task 2.1 - Activity Analysis (County performs -- LAC analyzes)

Using information collected in prior tasks, combined with LAC's experience, a general listing of the type of activities conducted at each agency will be determined. These may include such activities as drain cleaning, repair/replace rock rip rap, vegetation control, fence maintenance, sign repair/replace, blading, graffiti removal, A/C pavement replacement and street sweeping. Attempts will be made to generally estimate the amount of effort made in each activity. Rather than cover all activities, an effort will be made to utilize principals such as Pareto's law that allows a focus by estimating that approximately 20% of the activities comprise 80% of the work. By applying this approach, it is anticipated that between 30-40 activities will be identified or modified for each function (road and flood).

In this activity process, an inventory item that best describes the potential workload over the life of the asset will be identified. Examples would be lane miles or square foot of asphalt

pavement for pothole patching, and number of drains for drain cleaning. These lists would then be compiled for a composite list of activities and their units of measure. In addition, LAC will evaluate activity list performed at each a maintenance yard.

End Product: Activity list with unit of measure would be identified and documented.

Task 2.2 - Work History (County performs -- LAC analyzes)

An estimate of the resources utilized by major activity will be made for a 1 to 3 year basis. This can be done through a review of daily work reports and other accounting systems, estimates of material used and field observations of the existing operation and reporting systems such as the existing maintenance system and the PMS. The data compiled will be person-days of work annually by activity along with work units accomplished. Examples for FY 2002 would be Pothole Repair for 40 days in which 80 tons were placed; the number of drains cleaned; the linear feet of fence installed; and the number of signs replaced. This will be done for each activity for each yard. Also, any maintenance support contract information will be obtained to capture all maintenance effort.

End Product: A history of maintenance for major activities in the County.

Task 2.3 - Features Inventory (County performs -- LAC analyzes)

With the assistance of the County staff, LAC will estimate the inventories of infrastructure (roads, signs, flood channels, drains) features that relate to work being performed. Existing files, information from maintenance staff, and observations will be used to determine initial values. The County will assist in the actual research with guidance from LAC. LAC will compile the information to complete the effort. Existing records such as County's flood reach book will be used in lieu of actual field data gathering. In addition, a small sample size method may be utilized in this phase to eliminate major field data collection for activities where information does not exist. Examples of this are mowable acres and feet of fence.

Detail asset management data collection will be reviewed and a discussion of needs (such as to comply with the Governmental Accounting Standards Board Statement 34) will be prepared for the County's consideration.

End Product: An estimate of infrastructure features will be made. This information will be compiled and placed into the maintenance database.

Task 2.4 - Resource Data (County performs -- LAC analyzes)

Again using the assistance of County staff, LAC will request a listing by general category for labor, equipment and material resources by yard. LAC shall determine the format after consultation with the committee. Existing personnel and equipment files, information of maintenance staff, and field and office observations can provide the estimates. If not available, unit costs will be estimated.

End Product: Resource data will be collected.

Task 2.5 - Financial Resource Data (County performs -- LAC analyzes)

The existing systems identified along with past budgetary information will be used to collect the financial data. Workloads can be compiled from a combination of material records, time sheets, field estimates and historical estimates. LAC shall direct assigned resources in this effort. This would include budgeted dollars for maintenance and those actually spent. Both in house and contract numbers will be compiled. Interviews will be conducted with the County supervisors in charge of maintenance.

End Product: Workload and financial data will be captured.

Task 2.6 - Equipment Fleet History (County performs -- LAC analyzes)

LAC will utilize their database to make estimates of equipment needs and utilization for the major maintenance activities being performed. These values will be compared to actual numbers of equipment available. Also, histories from each equipment shop will be evaluated to ascertain general downtimes and operating costs. These values will be compared between other agencies and industry standard data. In performing this analysis, an effort will be made to determine costs born by equipment resources used by maintenance staff in the County.

Additionally, we will explore the use and/or feasibility of sharing equipment resources with other organizations, contracting equipment and the procedures used to maintain equipment, both in the field and during routine service.

End Product: An estimate of equipment units available and unit costs.

Task 2.7 - Policies (County performs -- LAC analyzes)

An analysis of current policies established by the County will be conducted and used in the implementation process. Suggestions on policy modifications may be made.

End Product: A review of County policies.

Task 2.8 - Management Approach

All key maintenance functions identified in structured interviews will be further analyzed through the appraisal of available planning documents such as inventories, needs identification systems, complaints, routine maintenance schedules, activity guidelines, work methods and work programs. The scheduling methods and assignment of work processes will be recorded and discussed with various staff. The work-orders or log items that track work performed and hours and resources expended will be identified and observed. Finally, the control mechanisms, such as generated reports, will be evaluated. Any graphs, and/or figures that track effort expended, work accomplished and or budget used will be obtained and generally understood and evaluated.

These existing processes will be documented in a short summary and the areas in the basic management processes that are in need of improvement and enhancement will be identified. In addition, the maintenance structure and organization will be identified and general assignments and responsibilities outlined for key staff.

Using the information obtained in previous steps, LAC will flowchart how work is identified, planned, organized, scheduled and performed. All reporting information also will be documented. Both the proactive (preventative) and responsive maintenance will be identified. The amount of time spent on each area will be estimated.

This sub task will be documented in a concise 10-20 page working paper and distributed to the Committee. Further LAC will present baseline information to all maintenance and operations employees for their input.

End Product: Interview and define basic existing management processes and document findings in a concise baseline working paper.

TASK 3 - EVALUATE OPPORTUNITIES

The LAC team will use collected information and past experience to evaluate areas where improvements can occur. The following subtasks will be performed in this effort:

Task 3.1 - Work Flow Analysis

The ideal workflow will be compared to the actual processes. Any differences will be identified. Also, opportunities to streamline or eliminate unnecessary steps will be identified.

Task 3.2 - Work Method

A sample of several key activities would be observed by LAC in the field and crew size, equipment, method, quality of work and productivity will be noted. From previous consultant's experience, discussions with staff and other agency data, comparisons and opportunities for improvement will be identified. This will include specific activities for all general maintenance groups in the County.

Task 3.3 - Resource Needs

Information collected in previous tasks will be stored into a database. LAC, using estimated frequencies or levels of service, will then estimate workload and resources needed to meet this level of service. These labor and equipment resources would be compared to the current operation resources.

Task 3.4 Workload and Budget

Using the working paper information from previous tasks and discussion with maintenance staff, the procedures used by the County to develop annual maintenance budgets will be examined. This review will focus on the relationship of funding to workload. Other areas covered will include sources of funding, allocation of the funds, impact of funding and workload changes/constraints and how maintenance expenditures are justified.

Task 3.5 - Macroscopic Benchmarking

A group of comparable agency performance parameters, from no less than three (3) agencies, will be compared to those of the County. Agencies throughout the US and various California agencies would be compared on such items as crew size and average daily production. Any areas of opportunity for improvement would be identified. Also, overall parameters such as \$/inventory (road mile, channel mile, etc.) and labor per inventory (road mile, channel mile, etc.), would be compared at an overview level.

End Product: A Listing of comparative factors (\$/lane mile, staff/lane mile, etc.) to similar size agencies on a systematized basis.

TASK 4 - DOCUMENT AND PRESENT FINDINGS

The findings of this first phase will be compiled and documented by LAC during this task and presented to the Committee and general staff for review and further discussion.

Further, LAC will present initial findings to all maintenance and operations employees for their input. After that presentation, the information will be assembled into a working paper submitted to the committee for their comments.

After comments from the committee, the findings and related baseline information will be used to outline a series of recommendations. Further, LAC will present initial recommendations to both the committee and to all maintenance and operations employees for their input.

After that presentation the information will be assembled into a working paper submitted to the committee for their comments. General recommendation categories of work planning, organizing, directing and improving/controlling will be used, along with a general process category. After that presentation, the information will be assembled into a draft report submitted to the committee for their comments.

Using the feedback from the committee's review of the report, a final report will be submitted. The report produced during this task will provide the information necessary to document benefits of improved operation for staffing, service levels and organizational issues.

Input and counsel from the review Committee and all field staff will be encouraged during both the findings and recommendations presentation to assist LAC in further refining the recommended solutions.

End Product: A working paper that documents the findings of Phase 1. In addition, initial recommendations will be outlined to improve the County's maintenance service.

TASK 5 – DOCUMENT RESULTS

The report will be finalized after meeting with County staff. After the presentation, input and counsel from the Committee will be encouraged to assist LAC in further refining the alternatives to obtain the recommended solutions as well as to help in the fine-tuning of the maintenance management system requirements.

End Product: A final written report that documents the baseline operations, findings and recommendations in Phase 1.

PHASE 2 – GUIDING COUNTY IN SELECTING APPROPRIATE TECHNOLOGY AND MAINTENANCE MANAGEMENT SOFTWARE

Once specific technology needs have been identified in Phase 1 to help manage the County's maintenance operation, LAC and the Review Committee will address the specific nature of the needs, and solutions will be identified.

TASK 6 -- PROJECT INITIATION REVIEW AUTOMATED SYSTEMS OPERATION

LAC will review the County's current databases for all infrastructures and system operations as they relate to Public works maintenance. LAC will look at the various inputs and outputs and develop an understanding of how the data is processed. A general logic flow will be developed. LAC will interview the computer services manager and County staff that manage the databases development.

End Product: An outline of current database operation for tracking maintenance will be prepared.

TASK 7 - DOCUMENT MISSING ELEMENTS

A comparison of the existing County operation will be made with desired goals for the system. Areas not covered or lacking from desired consequences will be documented. An outline of the County's current system with functions that are operational and any efforts needed to meet desired goals will be prepared.

This information will be compiled and presented to the Review Committee. All comments and input from the Committee will be outlined.

End Product: Outline of current system deficiencies will be prepared and efforts estimated to meet the County's goals.

TASK 8 - DEVELOP SYSTEM GOALS

This task involves the review of the system requirements and evaluating various software systems, database options and existing capabilities. This task will be used to finalize the appropriate system for the Department. First, the initial list of potential goals of the system (from above) will be outlined by LAC showing how the goals can be successfully met. This data will be refined and summarized by the Committee with input from County staff. LAC will document this in a short working paper and present the options to the Committee. LAC will then assist in building a consensus to an approach.

This system may be a combination of several maintenance systems, one stand-alone or several inventory databases. This decision will be finalized through discussions with County staff and the review committee.

After consultation with potential users such as the DPW, Computer Services, Road and Flood Division supervisors, LAC will outline the needs and goals (WIMIS, FIMS, CHS, Asset Management, Finance) of the new system and prepare a presentation. The Committee will meet and finalize the County's desired goals for the computerized management system.

Submission of a detailed report of the findings will be drafted for the Committee's review meeting all goals and needs identified. Two meetings will occur to finalize the software needs and ensure all issues are covered.

End Product: LAC will evaluate software options and needs and prepare draft report that documents goals.

TASK 9 DEVELOP STEP-BY-STEP IMPLEMENTATION PLAN AND TIMELINE

Once all goals and needs for a new system have been identified a step by step implementation plan and timeline will be created. The plan will include step-by-step processes to implement a new system with a detailed timeline for the accompanying tasks within the plan. The plan will be to select software to meet the needs identified in task 8 as well as the following requirements:

- a. Generate maintenance costs by type of work performed for a section of channel or roadway.
- b. Perform historical data tracking functions by type of work performed for a section of channel system or roadway.
- c. Identify incomplete maintenance and work order projects.
- d. Produce employee timesheets and equipment time and usage reports that can interface with County's EMAC and new job cost accounting systems.
- e. Perform scheduling and work progress and monitoring functions.
- f. Easily transfer information (start of maintenance, GPS tracking, work order information and end of day work summary, etc.) from hand-held devices used by field personnel to the system database.
- g. Perform equipment and personnel analysis and project management functions.
- h. Generate a checklist for completing a unit of work.
- i. Generate real-time, user-friendly reports.
- j. Provide a user-friendly front end to facilitate data entry.
- k. Address poor Telco communications with remote sites.

A draft plan will be submitted to the committee for review. Once all comments have been made the plan will be finalized.

End Product: A complete implementation plan and timeline will be created.

TASK 10 – DOCUMENT IN FINAL REPORT

After meeting with County staff and reviewing system needs, goals and the implementation plan, a final report will be submitted documenting the findings and recommendations for a new maintenance system.

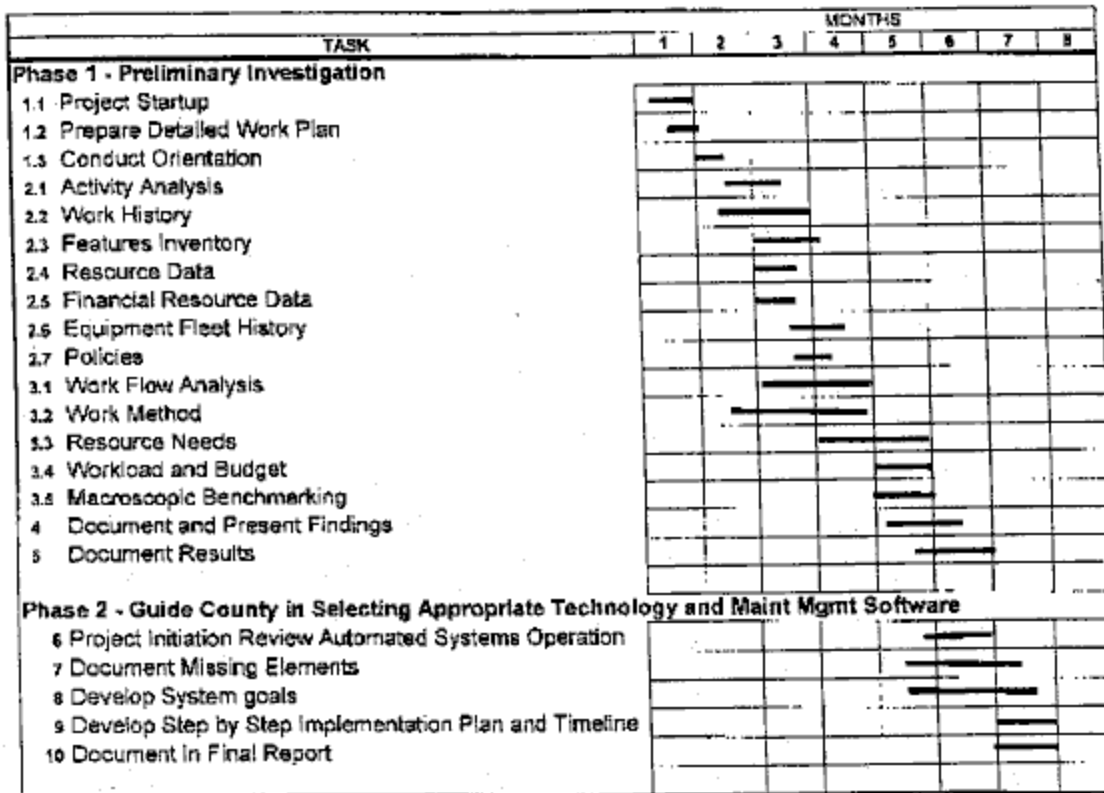
This information would outline all requirements and desires for the County to prepare a RFP for software for agency maintenance need for road and flood operations.

End Product: A complete report outlining automated needs and requirements for San Bernardino County road and flood maintenance operations.

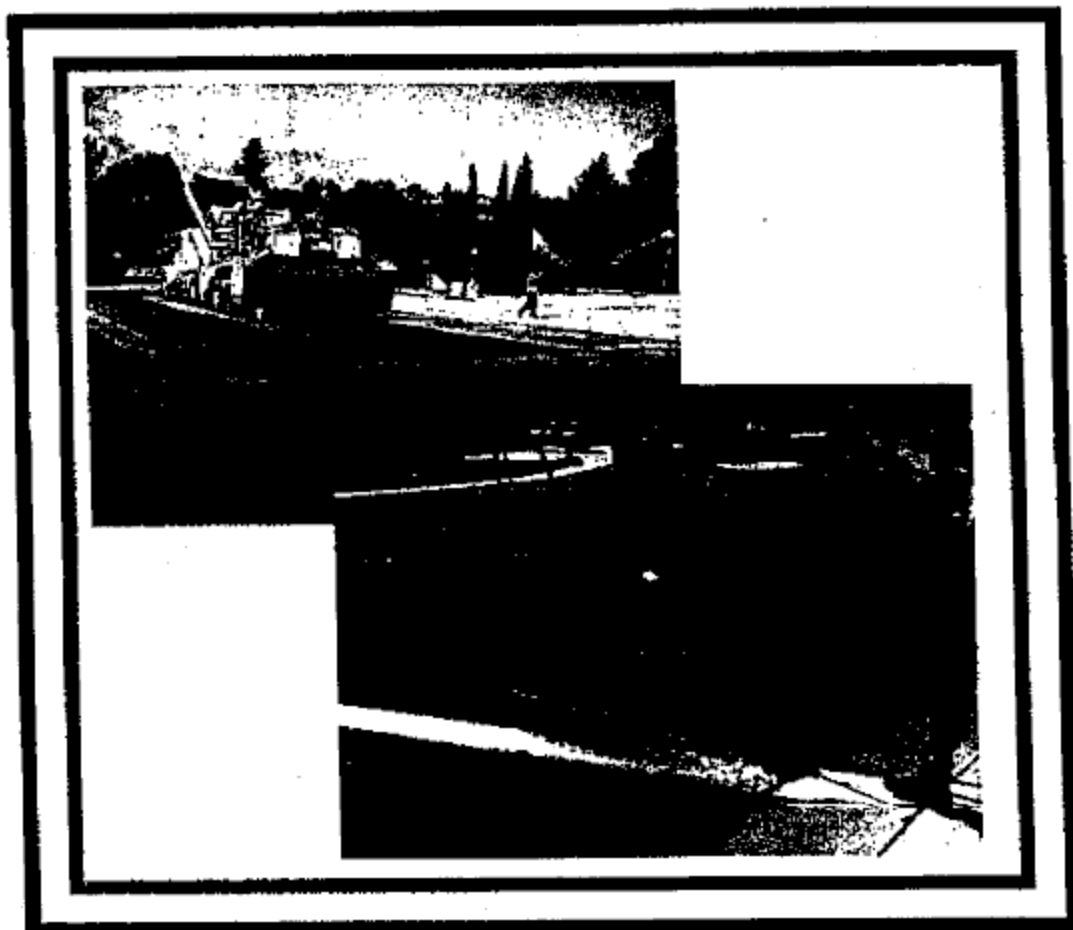
San Bernardino County Maintenance Mgmt Evaluation Cost Estimate by County Task

TASK	Cost
Phase 1 - Preliminary Investigation	
1.1 Project Startup	\$4,547.84
1.2 Prepare Detailed Work Plan	\$994.84
1.3 Conduct Orientation	\$1,421.20
2.1 Activity Analysis	\$5,400.56
2.2 Work History	\$1,847.56
2.3 Features Inventory	\$994.84
2.4 Resource Data	\$1,279.08
2.5 Financial Resource Data	\$852.72
2.6 Equipment Fleet History	\$1,421.20
2.7 Policies	\$568.48
3.1 Work Flow Analysis	\$4,974.20
3.2 Work Method	\$5,116.32
3.3 Resource Needs	\$3,126.64
3.4 Workload and Budget	\$4,547.84
3.5 Macroscopic Benchmarking	\$1,705.44
4 Document and Present Findings	\$5,684.80
5 Document Results	\$7,390.24
	\$51,873.80
Phase 2 - Guide County in Selecting Appropriate Technology and Maint Mgmt Software	
6 Project Initiation Review Automated Systems Operation	\$2,273.92
7 Document Missing Elements	\$3,126.64
8 Develop System goals	\$3,695.12
9 Develop Step by Step Implementation Plan and Timeline	\$3,837.24
10 Document in Final Report	\$6,253.28
	\$19,186.20
Total	\$71,060.00

Project Schedule



Section 7 Appendix



Employee "buy-in," education, union coordination help launch successful maintenance management program for Silicon Valley City

John Betonte, P.E., Maintenance Manager, City of Fremont, California
Nicholas T. Nguyen, Senior Associate, LA Consulting, E. Segundo, California

The City of Fremont, California has implemented an innovative maintenance management approach that has dramatically improved operations and resulted in annual six-figure cost savings.

Fremont, population 200,000, is located about 30 miles southeast of San Francisco. The city is the Bay Area's fifth largest and ranks 14th in size statewide, 94th nationwide. The Maintenance Services Division (MSD) maintains over 460 centerline miles of road, 70,000 traffic signs, 800 acres of parkland, and 800,000 square feet of facility space. The MSD employs approximately 122 full-time maintenance personnel and an additional 15-20 seasonal and temporary workers.

Public works maintenance departments continually process a large number of service requests, second usually only to a city's police department. But with city budgets by and large not getting any bigger, and in many instances even shrinking, maintenance operations by necessity must become more cost-effective and efficient.

With that in mind, in 1999 the MSD began implementing a comprehensive maintenance management approach that included new management processes and a computerized work and asset management software system.

Management Processes

The MSD sought to build a framework to effectively oversee the City's infrastructure maintenance needs through its managers and field supervisors. It did so by implementing procedures of the four fundamental keystones of management: planning, organizing, directing, and controlling. Planning sets the vision. Organizing allocates the resources. Directing accomplishes the

tasks. And finally, controlling reviews whether it has accomplished what it has planned.

Within the MSD, the planning effort involves determining major maintenance activities performed, defining activity guidelines, obtaining resource information, performing a general condition assessment, and establishing levels of effort for maintenance.

This comprehensive activity-based approach allows a work plan and budget to be established. Upon completion of the process, the planning effort determines the amount of work to be performed on an annual basis for the agency.

The next phase (organizing) further divides the work program into work to be performed on a monthly basis. This phase enables the work calendar and resource requirements (i.e., labor, equipment, and materials) to be determined for each month. The directing phase integrates the calendar, work request, routine maintenance programs, and work backlog to generate a schedule. The schedule is then used for more effective assignment of work.

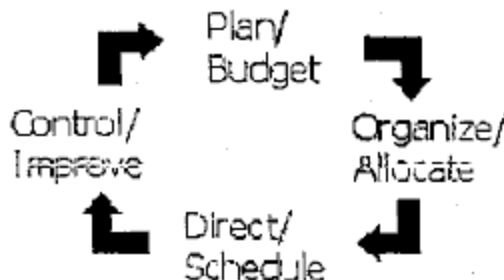
The completed work is recorded and entered into a computerized maintenance management software system. A series of reports are then generated to give supervisors the planned versus actual effort of maintenance. Finally, the information is used to evaluate the field effort in order to improve performance. Actual accomplishment information derived from the reports is used in each year's updating process.

Management Software

The adoption of new maintenance management processes required by the MSD staff wasn't an overnight success—education, facilitation and relationship building were important, as well as the management control software.

The MSD understood at the onset that software was only an "enabler" or tool towards improvement and progress. The right software matching its newly enhanced management processes and effective implementation of the system were required.

A cost-effective DOS-based software package was eventually selected and installed. Designed as an activity-based maintenance management system, it provides the City with powerful planning capabilities, workload distribution, scheduling



MMS Feedback Cycle

features, work order processing and management, and work performance analysis tools. Management established the maintenance plans each year and reviewed performance data (which was regularly shared with the staff). Playing an equally important role is the rank and file personnel who reported daily work activities with relative accuracy.

Although the initial effort met with some resistance, education and the development of trust among the stakeholders resulted in empowering the staff and a general "buy-in" of the entire approach.

Last year the City replaced their MMS software to align itself with its overall information technology "master plans." After undertaking another comprehensive selection process, the MSD seamlessly migrated to a powerful 32-bit, ODBC-compliant, Windows-based software system that is also capable of web-based operation for remote use, GIS (Geographical Information System) integration for visual representation, asset management, and PDA (personal data assistant) integration for work assignment and data entry. Other key features of the system include:

- The ability to plan maintenance work by activity for one or more years to project resource needs based on asset inventory and effort levels to generate a zero-based budget.
- The ability to track maintenance work by activities without the need to create work orders.
- When required for customer service reason and special internal tracking purposes, the ability to generate and track work orders with quick access to completion and cost information exists. Automated updating of customers can also be accomplished.

- The ability to generate plan versus actual performance data through "canned" and easy to produce ad-hoc reports to gauge whether department goals are being met.

- The ability to operate over a client server network and lendinal service for web-based use.

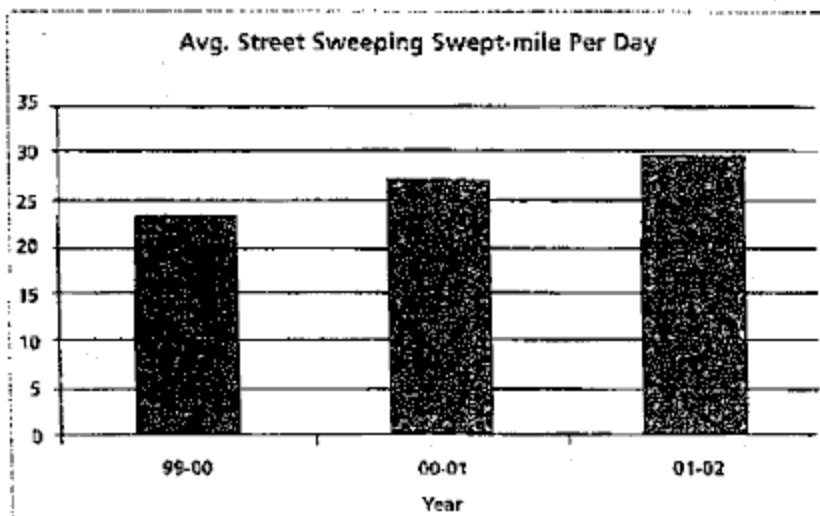
A Win-Win for All

The maintenance management practices implemented by MSD have resulted in a number of benefits for the City.

During the first year alone, efficiency savings averaged approximately 11 percent for all maintenance activities, which translates to about \$400,000 annually.

At the time, when asked how many miles they sweep in a day, operators answered, "I don't really know...I just sweep my route."

So in initially baseline the operation, an average daily production performance measure was established at 20 swept-miles per day. By the end of the first year, the measure was up to 23.3 swept-miles per day. At the end of the following year (2000-01), the measure increased again to 26.8 swept-miles; a performance increase of 17 percent. Since then the measure has risen again to 29.3 swept-miles per day. In sum, the operation has seen an approximate improvement savings of over \$119,000, which will recur annually if the current performance level is maintained.



Street Sweeping Performance

The City's street sweeping operation is an ideal example of the department's marked improvements. Before the implementation of the MMS, the City never tracked the actual performance of its maintenance activities. Although the street sweeping operation was well defined with monthly routes, good equipment, and a professional staff, no one really knew whether operators were working optimally or not, or whether the operation as a whole was competitive.

These improvements were realized not by necessarily working harder but by working smarter and paying attention to the work itself. Maintenance supervisors and their crews now actively focus on the details, lay out their work in a systematic way through improved scheduling techniques, review their performances monthly, and make any necessary changes to their work methods to achieve the highest possible results. The new dynamics within the operation reflect an empowerment of the staff that is real and accepted.

Implementation Pitfalls and Issues

Although now highly successful, the City's maintenance management system was not instantly accepted. Change, especially in the work environment, can be stressful. Some of the key issues that should be observed during any implementation include:

- **Concern** – initial reactions of fear, insecurity, and general displeasure of change will typically be observed. Questions of why management is instituting work tracking procedures and performance reviews will need to be addressed.
- **Resistance** – concern eventually will lead to resistance. The "old way is fine," but in reality it is not.
- **Apathy** – resistance may manifest itself in the form of apathy. The lack of interest to participate in the implementation process from line staff to superintendents may become evident.
- **Sabotage** – the implementation process hinges, in part, in collecting data from many stakeholders. Some participants may not be forthcoming with data.

To address these employee concerns, the City focused on the following:

- **Employee involvement** – employees were encouraged to participate in the planning, design and implementation of the maintenance management system. They helped set the work standards and they provided the work plan.
- **Education and commitment** – the key to addressing all of the above was to continually educate the staff on why it is necessary to institute these management procedures and what they are used for. Speed and commitment are also important. The sooner the approach is in place the sooner you can provide your staff with feedback. Leading by example is

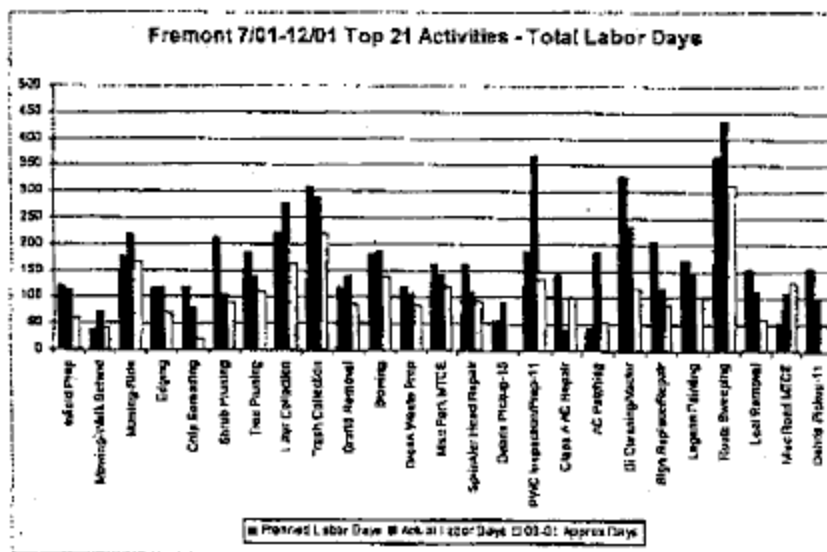
paramount. Any lack of senior management participation is a call for apathy.

- **Employee buy-in and empowerment** – by successfully educating the staff on the purpose of the new approach and facilitating the behavioral changes, the staff will begin to understand the intent, take ownership of their work, and contribute to the success of the organization.

Conclusion

Although the initial effort met with some resistance, education and the development of trust among the stakeholders resulted in empowering the staff and a general "buy-in" of the entire approach. Moreover, it has resulted in \$400,000 in annual savings for the City.

Recognizing the successes and marked improvement of the systematic approach towards maintenance, City officials have also increased the MSD's budget and staff.



Plan versus Actual Comparison of Labor Days

- **Union coordination** – Effective discussions through a series of meetings with the union stewards and the local union business representative allowed them to raise their concerns. These were not "meet and confer" or "bargaining" sessions since the scope of the maintenance management process is within management's right to organize the work, but they were used to elicit concerns and provide a sounding board for the union as an institution.

In sum, to overcome any potential resistance it is critical to comprehensively outline the processes to be implemented and establish a level of trust with the staff.

Fremont now has in place a comprehensive maintenance management system and a powerful software package that helps the Maintenance Services Division more effectively plan, organize, direct, and control maintenance operations.

To reach John Betonte, P.E., send e-mail to JBetonte@ci.fremont.ca.us. To reach Nicholas T. Nguyen, send e-mail to nnguyen@lacconsulting.com.

R

Six-figure savings with MMS implementation and citizen involvement too!

Craig McConnell
Director of Public Works
Charlotte County, Florida

Harry C. Lorick
Principal, LA Consulting, Inc.
El Segundo, California

Six-figure savings in the first six months of road and stormwater maintenance system implementation may sound too good to be true, but Charlotte County, Florida, got just that and more. An innovative Maintenance Management System (MMS) initiated for Charlotte County generated savings of more than \$750,000 in the first six months of operation plus \$500,000 in the following year. These savings were attributable to improved planning, work identification, scheduling, new crew configurations, and following maintenance activity guidelines.

The changes were implemented in an environment of considerable skepticism on the part of citizen advisory committees involved in budgeting, planning and work review. From the start of system design and implementation, a partnership was needed with the public to help guide management of an extensive 2,110-centerline mile roadway network. This large road system presents unique maintenance issues as nearly 60 percent was built within areas platted in the 1960s and 1970s, with the density of residential and commercial development that was actually built varying widely today. The 20-plus individual citizen committees that existed prior to the MMS were incorporated into the system design and implementation and are now much more supportive of the County's maintenance efforts.

Background

Charlotte County, with 143,000 residents (129,000 unincorporated), is located in Southwest Florida, 100 miles south of Tampa along the Gulf of Mexico. The one incorporated city, Punta Gorda, has consistently been rated by *Money Magazine* as one of the most desirable small U.S. cities in which to live.

The County is geographically divided into three areas. West County is from the Gulf of Mexico to the Myakka River. Mid-County is between the Myakka River and Peace River. South County is south and east of the Peace River. In much of the unincorporated area, the land is subdivided into hundreds of thousands of residential lots, both developed and undeveloped. Extensive sections of the platted areas are sparsely populated.

In addition to the 2,110 centerline road miles, there are 450 drainage way miles and 91 traffic signals, all maintained through three maintenance yards with 105 employees. The County's Public Works Division, with an annual budget of approximately \$62 million, maintains all public roads in the County except those under the jurisdiction of the Florida Department of Transportation and streets located within the City of Punta Gorda.

Funding and Citizen Involvement

The County funds its transportation network from two primary sources—fuel taxes and non-ad valorem assessments, but not (general funds) property taxes. The arterial and major collector system (Road and Bridge District) is supported by the fuel tax base, while the local (residential) roadways are funded by the property assessments levied through 40 separate street and drainage maintenance units. There are two types of assessments—Municipal Services Benefit Units (MSBUs) and Municipal Services Taxing Units (MSTUs). MSBUs are benefit districts where assessments must directly correlate to the benefits accrued (the largest MSBU is Greater Port Charlotte located in Mid-County with over 60,000 quarter-acre residential lots). Municipal Services Taxing Units (MSTUs), of which there are relatively few in comparison to the number of MSBUs, do use ad valorem property assessments to generate revenue.

Given the yield of the various gas taxes levied, the 210-mile Road and Bridge system is projected by Public Works to be adequately funded over the next 20-year period to support maintenance and rehabilitation needs, but not capacity improvements such as widening or building new roadways to handle more traffic. The local roadway system spread out through the various MSBUs, however, is in a much different situation, with maintenance and rehabilitation needs exceeding resources by a considerable margin. A recent projection identified that estimated maintenance and rehabilitation needs over the next 20 years for local roadways would exceed funding by over \$135 million.

Funding of the local roadway system varies within each of the MSBUs, reflecting in considerable measure citizen attitudes shaped over many years of perceived slow, inefficient, and ineffective maintenance performance by the County. Compounding the problem is the fact that the actual road and drainage infrastructure created by the land developers within the individual MSBU's also varied widely as to capacity and structural sufficiency, which has resulted in extremes of conditions and associated maintenance demand. In fact, the MSBU/MSTU system was explicitly created in the 1980s with the objective of localizing resource generation for maintenance and improvements, but with other areas of the community not sharing the cost burden. While the fundamental premise resulting in the proliferation of individual districts is arguable, today's reality is that the MSBUs do exist, work done within each of them is very visible, and there is an ongoing critical need for effective and efficient performance and management processes.

Continued from page 63

There is a separate budget and detailed maintenance work program for each of the 40 individual MSBUs; all expenditures are separately accounted, and any proposed substantial assessment rate increase typically requires a formal public hearing for the specific unit. Further, citizen committees have input in the formulation of annual work programs and budgets, assessment levels, and priorities/scheduling of work to be accomplished. The committees meet regularly with County coordinators to review work done in terms of cost, productivity, and schedule accomplishments. All of this communication and coordination has a cost, which must be carefully managed to assure that overhead administration are kept to an absolute minimum.

Prior to the establishment of the MMS, the County had no automated system in place unifying work planning, scheduling, and cost accounting. Without either overall maintenance strategies or specific performance goals tied to adopted levels of service, it was difficult to determine how crews should be staffed, equipped, and deployed. Documenting results, productivity, cost and accomplishment were likewise difficult, with the annual budget formulation process therefore problematic.

Other circumstances complicated the County-public interface as well. Inadequate drainage systems are maintenance-intensive, and have accelerated roadway deterioration. Further, a very high percentage of the population consists of those who have relocated from other parts of the U.S., and are unfamiliar with the environmental, topographical and infrastructure issues within a subtropical region. Hence, scarce resources in some cases were being continuously diverted to respond to localized complaints of standing water and vegetation growth, a normal occurrence in Southwest Florida. Additionally, in terms of age, Charlotte County is the second oldest county in the United States. While demanding more in short-term service delivery, in general the retiree component of the population has insisted that resource generation through the MSBU assessments be austere, and in some cases inadequate, to the detriment of longer range, and demonstrably more effective and efficient, life-cycle cost-based infrastructure management.

Implementing the MMS

In 1996, Charlotte County recognized the need to comprehensively restructure its maintenance approach to be more business-like, creating an integrated system focused on effective, efficient service performance. But recognizing the need was only the start, and one year was required to "sell" the project, which was commenced in 1997. By early 1998, with the involvement of representatives from key advisory committees, the MMS was up and running. Since then, maintenance forces have used the MMS to manage their work, from inventorying facilities to creating budgets, scheduling, and accomplishing annual programs, tracking cost and productivity for all activities performed. Most importantly, the approach is proactive/predictive, rather than reactive, and assures a long-term infrastructure management perspective.

With the performance demonstrated since MMS implementation, the nature of citizen advisory committee relations has changed dramatically. Monthly status reports are generated from the MMS system and distributed to the committees, which hold quarterly "business meetings" tracking progress toward completion of the annual work program, rather than the all too often complaint sessions of the past. This shift was dramatically evidenced recently when the Englewood East committee, an active group representing the second largest MSBU, requested an assessment increase. At the required public hearing, the desire of the community to fund a higher level of service was expressed, and the increase was approved. The enhanced work program was "pioneered" cooperatively by the Public Works Division and citizens advisory committee using inventory, cost, and productivity information residing in the MMS.

With deployment of the MMS, several years of actual cost and productivity information have been built up in the databases for all of the 80-plus activities, including the following:

- Asphalt (potholes, repair)
- Concrete (catch basins, intered ends)
- Drainage (major outfalls, culvert cleaning)
- Roads and Shoulders (guardrails)
- Vegetation Control (brush cut)
- Community Appearance (median, sidewalk maintenance/sweeping)
- Signs and Markings (sign maintenance, striping, herbicide)
- Yard/Fuel Maintenance (fuel truck, transport)
- Other Maintenance (Landfill fees, bridge maintenance)
- Contract Activities (mowing, aquatic/herbicide services)

The system also is used to track other maintenance support services/cost components such as capital project management (inspection), surveying and mapping, stormwater engineering (primarily for sizing pipe replacements), traffic engineering, and administration and supervision.

What Citizen Participation Really Means

As previously discussed, establishment of the MSBUs that fund all residential road and stormwater systems maintenance continues to involve much more citizen input than normally seen by a county road agency. In some cases, citizens have even assisted in inventorying facilities, to become more familiar with the types, extents, and conditions of systems being maintained. This and other involvement can be characterized by the "pluses and minuses" summarized below:

Advantages

- Direct voice in budgeting and use of funds
- Levels of service selected by the citizens
- Organized community group for coordination
- Assist in work needs identification
- Accountability established
- Customer-based service
- Businesslike approach

Disadvantages

- Uneven participation of residents
- Role of professional/technical staff diminished
- Micromanagement
- Proliferation of units can mean potentially expensive accounting and overhead support
- Short-term (non-life cycle cost) orientation

Demonstrated Results

The Maintenance Management System was successfully implemented over a one-year period because of the close cooperation between the citizens advisory committees and the County. The net result has been greater efficiency and productivity, in part through elimination of redundant databases. During that first year, \$700,000 of the \$750,000 "savings" was shifted from recurring maintenance activities to funding urgently needed road resurfacing, while enhancing the levels of maintenance services.

Furthest positions not needed to perform maintenance services at the enhanced levels of services were "banked," to be held vacant until needed in the future as the population increases. With "directed maintenance" a two-year-plus backlog that existed in 1998, primarily in drainage activities that comprise over one-half of maintenance services, has been reduced to less than two months in 2001. The associated real savings are the cumulative results of many factors such as:

- Method improvements in the way the work is done
- Use of optimal crew sizes and reduction of unnecessary crew members
- Focused approach of management and staff in production
- Efficient short-term and long-term scheduling
- Understanding by maintenance employees of what is expected
- Reengineering of all work processes
- Reorganization of yards to minimize travel time and station workers closest to their work
- Simplification and elimination of previous databases and recording requirements

These improvements are not "one-time-savings," but actions that are generating continuing efficiencies, enabling more of the "right, on-time work" to be done at the same resource levels.

The transition process was not completely seamless, as it required changes in culture, approaches, and methods. A change of this magnitude required educating all personnel associated with maintenance processes on the "how and why" for the changes, and gaining their buy-in to participate. Since the implementation was predominantly "ground up" rather than "top-down," everyone was involved in and could see the need for:

- Identifying work to be done
- Defining activities and generating inventories (square yards of pavement, etc.)
- Estimating productivity with resource needs by activity (equipment required, etc.)

- Estimating overhead needed to support each activity
- Establishing a database on the County's local network, to which everyone has access
- Implementing business practices, including evaluation of contract vs. in-house
- Simplifying in MMS activity, scheduling, and reporting formats

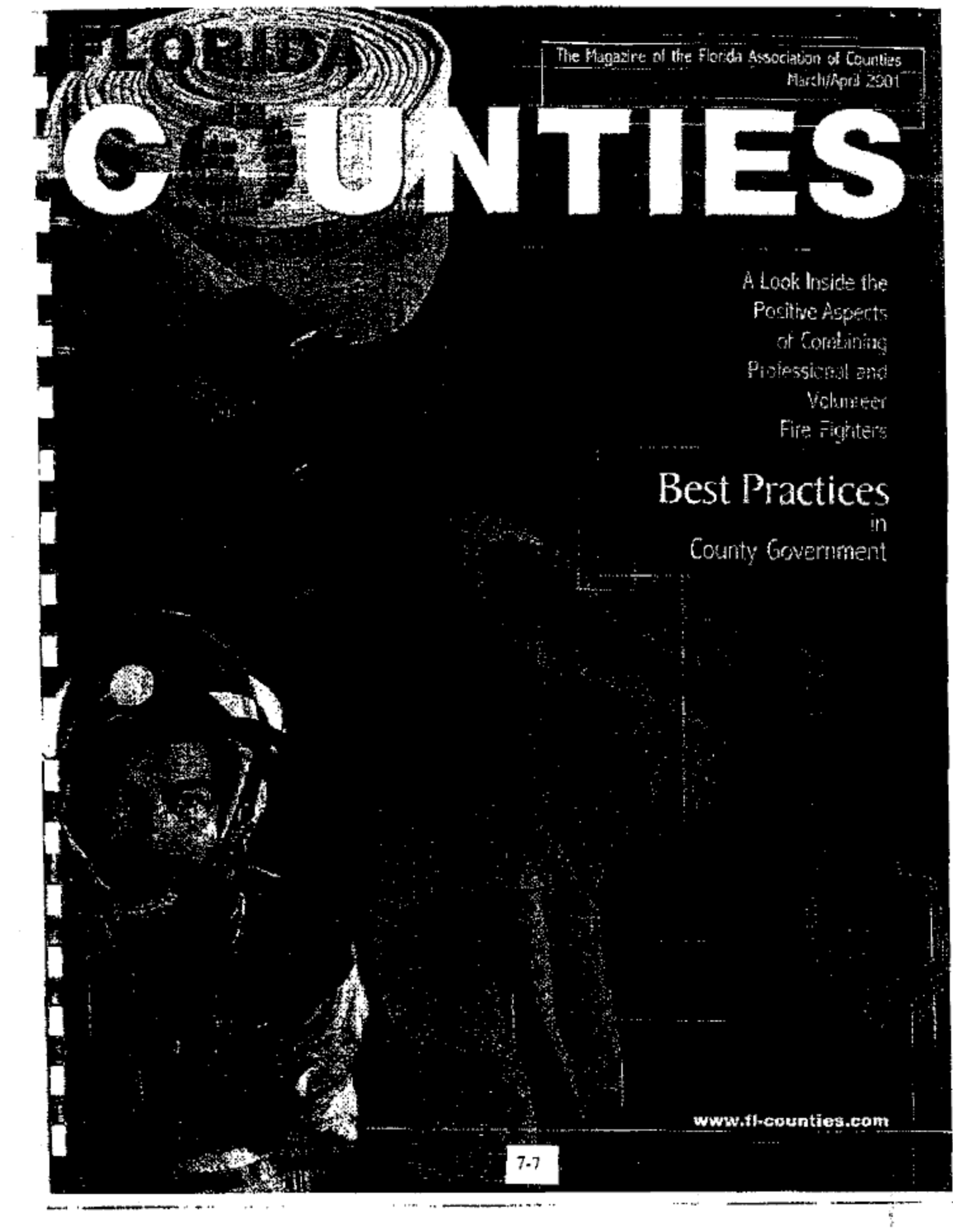
There is now complete tracking of work by activity, location and service request for each MSBT. Unit costs are determined and compared to plan activities. County employees have been trained to retrieve information and generate output to control the workflow. Work is planned on at monthly, quarterly and annual horizons, and scheduled for accomplishment on a two-week basis. At biweekly review meetings, production for the prior two-week period is reviewed, and the schedule presented for the next two weeks by each Foreman. The associated schedules are LCD screen-projected in Excel spreadsheet format using a laptop computer in the conference room connected to the Public Works local network. Crew members know in which areas of the County they'll be working, and what specific activities to undertake. The Director of Public Works, County Engineer, MSBC Coordinators, other key departmental technical support managers, Maintenance & Operations Manager, Road Superintendent, and Foreman all attend the scheduling meetings, which now take only one hour biweekly.

Summary

Recurring maintenance accounts for a major portion of the County's public works budget. A Maintenance Management System was developed to assure that maintenance dollars are "rightly" and efficiently spent. The system now in place for Charlotte County puts the right people, materials and equipment on the right job at the right time using the right methods. In addition, improved participation of citizen advisory committees has established an ongoing County/community partnership empowering all parties in taking a hands-on role in enhancing operations. Citizens now contribute organized, useful input to work planning and evaluation of accomplishments, instead of believing they need to exert "more control."

Craig McConnell is Director of Public Works for Charlotte County, Florida, and can be reached at 904-575-3600 or by e-mail at cmccrnel@cpw.org. Harry C. Lorick is Principal of LA Consulting, established in 1993. The company provides a wide variety of planning, systems and technology services applied to public agencies and municipalities, with an emphasis on systems implementation and technical support for public works operations and maintenance. The firm's corporate headquarters is in El Segundo, California, about 20 miles west of Los Angeles. Mr. Lorick can be contacted at 310-416-9697 or by e-mail at hlorick@laconsulting.com.

17



The Magazine of the Florida Association of Counties
March/April 2001

FLORIDA COUNTIES

A Look Inside the
Positive Aspects
of Combining
Professional and
Volunteer
Fire Fighters


Best Practices
in
County Government

www.fl-counties.com

Maintenance Management Improvements in Public Works

Steve Winkler, Assistant Public Works Director, Hernando County Department of Public Works

Overview



Hernando County will be one of the fastest growing county economies in Florida during the next 15 years. In percentage terms, the population has increased more than 200 percent since 1980. The county, especially the western half along the US 19 corridor, has experienced a transition from rural to urban. This transition has led to the realization that the Department of Public Works must operate in both a suburban and rural maintenance mode and align resources to satisfy both customer bases.

The Department of Public Works has gone through a series of reviews to determine efficiency and effectiveness of service delivery. Most recently, a 1997 external management review suggested that maintenance operations may not be efficient. The critical areas of concern were:

- Informal planning/scheduling with minimal efforts to tie work expectations, time estimates, etc., to a work plan;
- System inventories that need to be updated (drainage structures, sidewalks, road miles, etc.);
- Lack of established targets for work to be completed, preventive maintenance cycles, etc., for use in planning/scheduling; and
- No direct and formal method for tracking work accomplishments was in place.

Department of Public Works management sought management consulting assistance specifically with expertise in public sector maintenance management to review operations and assist in identifying, then implementing, the most effective and efficient practices to manage a \$17.9 million operation. The Department engaged the services of Lorick Associates

Consulting, Inc. (LAC) of El Segundo, California, specializing in public works management operations.

Evaluation

LAC was contracted to complete a process that would accomplish four objectives: 1) Define, assess and document existing levels of maintenance in Hernando County (baseline); 2) Develop ideas that could improve current operations (findings); 3) Formulate recommendations leading to improvements; and 4) Assist in the implementation of strategies that would enhance a work management effort.

The baseline assessment documented how much work was being done and determined the appropriate frequency, number of cycles and types of activities necessary for maintenance of the county road network.

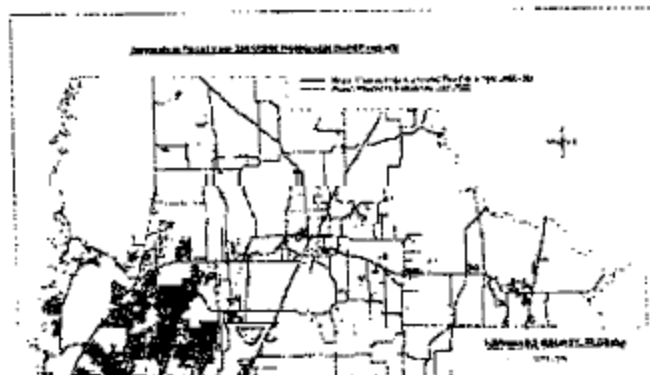
The Department was evaluated against other similar agencies and benchmarked in key areas such as average maintenance cost per lane mile and number of staff per lane mile.

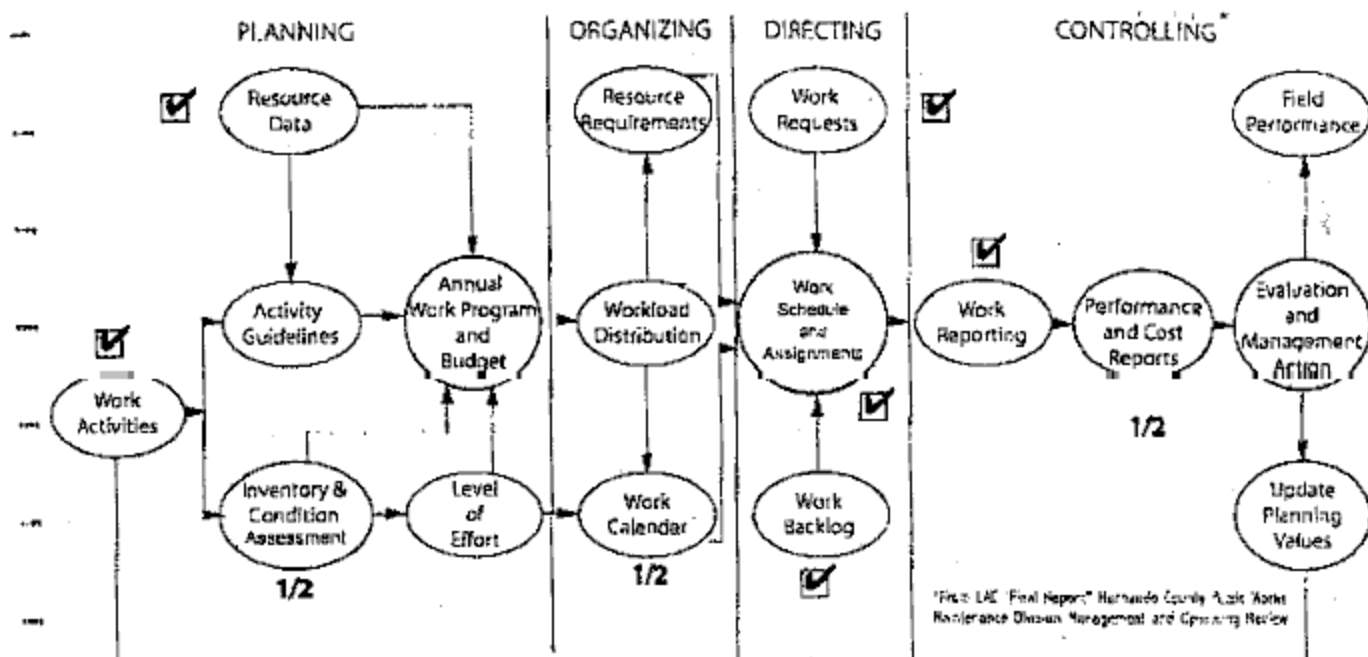
During the baseline assessment phase, it was determined that out of more than 200 documented maintenance activities, a small number (35) such as asphalt patching, grading,



invoicing, strip painting, etc., account for over 80 percent of the total work effort. It became obvious that improvements that impacted these activities would produce the greatest return.

In reviewing the findings submitted by LAC, Department management staff determined that significant improvements in service delivery were available. Findings that enforced this were:





- Underutilization of computer automation.
- Existence of multiple databases that operate independently.
- Access to work tracking data and use of management reports were limited.
- Field Supervisors spend the majority of available time investigating service requests as opposed to directing work of production personnel.
- A complete systematic approach to planning, organizing, scheduling and controlling work was not in place.
- A major item missing was a system to identify a baseline of work being accomplished, including the cost and productivity of such work.

Guidelines were specific and included: activity definition, mix of resources required, method to conduct work and targeted productivity.

With the completion of an asset inventory, activity guidelines and the establishment of service levels, the Department developed an annual work plan that will be the basis for our annual budget. Historically, the Department prepared a line item budget that was developed by allocating available financial and physical resources to historical information. This method tends to exhaust an obtainable budget and maximize service, but does not guarantee efficiency or effectiveness. A more businesslike approach is to determine what work is required and then organize resources around the work plan.

System Improvements

During the month of February 2000, the Department of Public Works initiated system improvements with the assistance of LAC. Utilizing the model identified in the chart above (*), the Department was guided by the four functions of management: planning, organizing, directing and controlling. Items checked indicate processes in place prior to the current review (* indicates partial implementation).

Planning

The first process addressed was completion of an infrastructure asset inventory. This step was essential to complete other planning processes. Where necessary, estimates were used to provide planning values for cyclical routines (right-of-way mowing, sign cleaning, preventive maintenance, etc.).

Activity guidelines were developed through team meetings with production personnel in each of the major program areas. Employees developed guidelines for each maintenance activity. Efforts were focused on those activities that accounted for the majority (80 percent) of the Department work effort.

Organizing

In general, the Department decided to maintain the existing organization structure with a few modifications. Changes that produced measurable improvements were:

- Expand use of inmate labor, where appropriate, in programs such as litter removal, various labor tasks, etc.
- Establishment of a response and special project crew which will minimize the need to redirect crews scheduled for routine and/or planned work.
- Reclassification of one supervisory position to lead a service request inspector effort that would allow field supervisors to focus their efforts on directing and controlling field employees.

Directing

The Department retained the use of weekly scheduling meetings with involvement from all field supervisors. Key



issues discussed during these meetings are labor/equipment/material coordination, special projects or potential interruption to the work plan, future scheduling needs and the need for accountability.

The schedule is prepared and distributed to all production employees at the start of the work week.

Controlling

Daily work reports were standardized to include documentation of resources used each work day (location, labor, materials, equipment and accomplishment are recorded). Approximately \$50,000 in savings was realized by using internal Technology Services staff to implement LAC's recommended enhancements to the department's two independent data bases (service requests and cost accounting), rather than purchasing a canned application. Enhancements include a fully integrated and customized system with improved ease of use and systematic reporting (productivity rates, cost per unit, etc.).

Field supervisors have been trained and provided with necessary computer hardware to utilize information in the database to improve operations. Management staff is currently working with supervisors to develop a monthly review of work performance that can be shared with all employees. Management staff feels a higher degree of worker involvement at all levels is necessary to continually improve the organization.

Conclusion

The recommendations and actions described were developed to provide documented improvement in the transportation maintenance effort in a manner that would realize fiscal savings and an empowerment of the labor force as well. Through efficient work methods and improved management of activities, the Department expects to realize an annual savings approaching \$235,000 (5 to 7 percent of the current operating budget). Similar savings should also be realized by other county departments, such as Parks and Facilities Maintenance, that are currently implementing maintenance management improvements.

The implementation of "businesslike" approaches, such as annual work plans, development of unit costs and a focus on efficiency, are necessary steps to valuing performance to the public and to compete for scarce revenue.

The Hernando County Department of Public Works will continue to search for ways to improve service by listening to customers and stakeholders and comparing to others in both the public and private sectors.

Steve Whitaker is the Assistant Public Works Director managing the Transportation Maintenance Division of the Hernando County Department of Public Works. He is a graduate of the University of South Florida (B.A. Economics/Business Administration) and has over 20 years experience in transportation maintenance/public works construction.

For Additional Information:

Steve Whitaker, Assistant Public Works Director
Hernando County Department of Public Works
Phone: 352-754-4060
Fax: 352-754-4469
E-mail: stewew@co.hernando.fl.us

Harry Lorick, Principal
Lorick Associates Consulting
Phone: 310-416-9697
Fax: 310-416-4602
E-mail: hlorick@laconsulting.com

GSG

Government Services Group, Inc.

Unique Funding Solutions for Your Community

GSG® is dedicated to solving funding and service delivery issues in the public sector. We provide extensive experience in solving financial resource needs to over 150 communities within the Southeast.

- | | |
|---------------------|-----------------------------|
| ■ Capital Financing | ■ Economic Development |
| ■ Fire-Rescue | ■ Neighborhood Improvements |
| ■ Water and Sewer | ■ Solid Waste |
| ■ Road Improvements | ■ Stormwater Improvement |

*Partially owned by Nabors, GBS & Nickerson, P.A.

Contact: Robert E. Sheets, CEO

Government Services Group, Inc.
315 S. Calhoun Street, Suite 660
Tallahassee, Florida 32301

Telephone: (850) 881-3717
Facsimile: (850) 224-7206
E-Mail: gsg@govserv.com

RENO IMPROVES EFFICIENCY WITH

Infrastructure Maintenance System

Reno, Nevada, is one of the fastest growing urban areas in the western United States. Located in a high desert valley (4,500 ft above sea level) in the western corner of the state, its 56 sq miles holds 162,000 residents. Along with the city of Sparks, it is part of an urban area of over 300,000, situated at the foot of the Eastern Sierra Mountains.

In early 1995, realizing the need for a more effective way of managing maintenance and establishing a process to improve operations, the city implemented a maintenance management system (MMS) for the 1,310 lane miles of roadways, 222 traffic signals, 245 miles of sewer lines, and 170 buildings that come under the responsibility of the public works department.

BACKGROUND

Why was this done? In 1994, the Regional Transportation Commission (RTC) was directed by the Washoe County Commission and the City Councils of Reno and Sparks, to study and evaluate the efficiency of all aspects of the region's road system. This evaluation of the road network, as directed by a distinguished panel of private and public leaders, resulted in the identification of a significant opportunity to reduce road expenditures through more efficient maintenance practices. The RTC retained consultant support to address this issue.

As part of this effort a complete systematic approach was designed

By Steve Varela and Harry Lorick
Steve Varela, P.E. is the Director of Public Works and the City Engineer for the city of Reno. Harry Lorick, P.E. is the Principal of Lorick Associates Consulting, Inc., a Manhattan Beach, California-based public works management consulting firm.

and implemented by the consultant for the three agencies that provide the road maintenance function, to ensure the most efficient approach was taken to plan and perform work. Reno, understanding this opportunity, decided to apply this same approach for its entire public works infrastructure. Designing and implementing an automated maintenance management system in fiscal year 1995-96 carried this out. The system has been in operation since January 1, 1996, with considerable success.

The first objective was to establish a system to manage maintenance that followed the basic management principles of planning, organizing, directing, and controlling work. The steps establishing this system included determining all maintenance activities, by work unit, which are

then used to determine an annual budget. The resources needed for the budget are estimated by month. A biweekly schedule process is used to perform short term planning, and work is reported daily and then evaluated on productivity and unit cost. This approach was integrated with a citywide network-based computer system to help plan and monitor all maintenance work.

Over 125 activity guidelines were defined with type of labor, equipment, and materials needed to efficiently perform the job; methods to complete work; and the expected productivity identified before the work is actually performed.

The effort also resulted in complete inventories of roadway and building features to enhance planning as well as estimating costs and scheduling work. Data collection included complete inventories of all signs, roadway markings, and building features. Each building inventory was compiled at the room level of detail so that numbers of items to be maintained such as painted area, light fixtures, carpet, etc. were counted. These items were then summa-

alized by each building allowing for the development of a detailed ten-year maintenance plan. The plan resulted in identifying a \$7.6-million program of rehabilitation needs beyond the routine maintenance effort that is now being used to budget future rehabilitation replacement and repairs.

Establishment of a routine advance planning schedule completed every two weeks ensures that staff is working at the right location with the right resources. Furthermore, the system requires inspections of maintenance work by supervisors to monitor work performance.

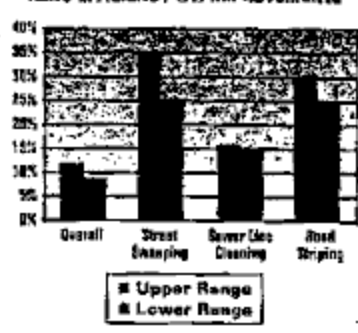
Reports on the work accomplishments of the maintenance staff to the public and city leaders are now in easy to understand terms: square foot of pavement, number of signs, feet of sewer line cleaned, and building locks repaired, for example. Work performed is tracked to determine hours and dollars used, and to establish a unit and total cost of each activity.

An annual work program, by activity, determines the amount of work expected, and is based on the desired level of service as well as the condition and amount of items to maintain. The work program is used to create a budget to match the workload.

The second objective was to establish a systematic approach to a continuous improvement process. The initial baseline information was developed and tracked for six months using the information collected. The system identified a baseline of work being accomplished; including the cost of the work in the level of detail necessary for staff to analyze and readjust work methods to improve operations. This process was fully documented and institutionalized for staff to continually improve.

The third objective was training, coaching and guiding staff in the use of the system. This was a considerable part of the consultant's effort, involving over 100 people. Thirty-five formalized training sessions were attended by the working managers, which involved them in the system development.

REMO EFFICIENCY (%) IMPROVEMENTS



System implementation involved various levels of employees in decisions on work methods and scheduling, which has had a positive impact on morale. In fact, a number of Reno employees wrote a memo to the city council making positive comments about the newly implemented MMS. More than ever, workers are focused on productivity and quality because they are empowered to effect how things are done. Employees often now openly state their concern over any management or administrative action that affects their productivity, from the timing of breaks, to changes in staff.

RESULTS AND BENEFITS

Staff now has an automated system to manage work. Business-like tools relate budgets to work units, schedule and efficiently use resources, and track cost and productivity for all activities. The system tracks proactive/predictive work as well as responsive maintenance.

The initial year resulted in city-wide routine maintenance productivity improvements of 9 to 12 percent, which translated to an annual \$623,000 to \$784,000 worth of efficiency savings. Outside of the initial hard dollar investment to develop this system, no additional costs are required to maintain the system. In the first year, every dollar invested will result in \$2.95 to \$3.84 in payback. In future years, the payback will continue to grow. The system savings are the cumulative result of: method improvements in the way the work is done; use of optimal crew sizes; focused approach of manage-

ment and staff in production; efficient scheduling; and understanding what is expected.

Examples include improvements in street sweeping productivity through better scheduling; in road striping through optimal crew size; and in sewer line cleaning through grouping of work and simplified scheduling. These improvements are not "one-time savings," but continual savings achieved through reducing the labor, equipment, and materials needed to perform each unit of work, and completing the work in the correct manner at the proper time, which frees up the resources to do more work. Other immediate opportunities were identified that can continue to improve the operations with a projected savings of an additional 5 to 10 percent.

In a growing region, such as the Sparks-Reno urban area, efficiency savings may not result in an actual reduction of total expenditures. This is because the amount of roadways and other infrastructure to be maintained is increasing along with the improvement in efficiency and level of service. Nonetheless, the savings are real since they represent the difference in cost between continuing the current trend of operation and operating more efficiently.

Other indirect benefits include:

- Establishment of an effective reporting system which is used to explain the use of maintenance dollars to the city council, manager, and the public.
- Creation of an accurate activity-based costing system that can be used to evaluate privatization opportunities, and bid for services rendered.
- Evaluation of regional sharing and coordination of resources (labor, equipment, and materials). For example, as actual numbers of needed graders, stripers, and patch trucks are compared for each agency, a decision could be made regarding opportunities to "contract" with each other to minimize special equipment needs.

PW

MANAGEMENT REVIEW IMPROVES



Public Works Department's Operations

A comprehensive management review of road maintenance conducted for the Department of Public Works-Transportation Division (DPW) in San Diego County has resulted in a one-time savings of more than \$2.6 million and recurring annual savings of about \$2.3 million.

The savings that have resulted helped reduce operating expenses and empowered the department's employees in taking a hands-on role in improving operations. They also enhanced capabilities for infrastructure management; pavement management; maintenance management; and a geographic information system (GIS) interface.

Larry Watt and Harry C. Lorick
Mr. Watt is Deputy Director of Public Works-Transportation Division, County of San Diego. Mr. Lorick is President, J.A. Consulting, El Segundo, California.

Long- and short-range planning and work assignments are now more easily accommodated by the new system.

There were six specific objectives:

Benchmark San Diego County performance levels with other comparable and "best in class" organizations;

Assess short- and long-range impacts on the county road system of possible annexations and incorporations (and consequently on station locations and staffing levels);

Improve operating efficiency and effectiveness of roads maintenance functions through: assessment of core versus non-core functions; review of asset obligation (staffing and overhead structure, equipment and property); and application of "best management practices" to current planning and work processes;

Identify opportunities for using technological advances (both materials and instrumentation/equipment);

Prioritize opportunities for managed competition and develop timelines for implementation; and

Determine how to best use the county's new pavement/maintenance/infrastructure management application software.

THE APPROACH

The County of San Diego's Department of Public Works Transportation Division has 211 employees, a \$94.1-million budget and 1,885 miles of maintained roads worth over \$1 billion in replacement value. The division is responsible for field engineering, fleet management, traffic operations, safety and loss mitigation, special district administration as well as 71 road maintenance tasks. The Road Maintenance Unit is divided into two divisions (North and South County). Eleven road maintenance station crews are located throughout the county. Additionally, four specialty crews do work countywide.

The six-month review focused on work performed by the Roads Maintenance and Field Engineering Units of the Division, which is comprised of:

- Field Engineering and Administration (includes Transportation Division management/office staff, support of various roads-related databases);
- Division I (South County) Field Operations (includes Roads Division I Field Headquarters, and six road maintenance stations);
- Division II (North County) Field Operations (includes Roads Division II Field Headquarters, five road maintenance stations, and one division wide special projects crew); and
- Countywide Field Crews (includes four crews—Striping, Drainage, Construction & Field Repair, and Road Structures).

One of the first tasks was to determine how much maintenance was being performed. The Road Maintenance Unit's principal activities are asphalt repair (35 percent of the total) and roadside maintenance (13 percent). The remaining 52 percent was spread over ten other general work categories.

To review current operations, the Road Maintenance Unit was comprehensively evaluated via observation, documentation, field reviews, and comparison to 30 similar agencies in other areas of the U.S. and 13 large California counties, including Alameda, Los Angeles, Orange, and San Bernardino.

An important criterion in conducting the evaluation involved both internal and external benchmarking. Detailed activity-specific (bore repair, crack sealing, and skin patching) and higher level criteria such as the average cost per lane mile and the average staff utilized per 25 road miles were applied. Benchmarking, which has become a widely used improvement methodology in the public sector, helps create the tools to assess performance and measure progress and establishes standards or goals based on what are considered "the best in the business." This allows the county to consider ways to improve its operation by looking at similar agencies. Further, the county compared its own road maintenance stations to determine opportunities.

The Road Maintenance Unit averaged 2.1 personnel per 25 road miles; the 13-California county average was 1.8.

For external comparisons, outside agencies surveyed had an average cost of \$4,814 per lane mile compared to San Diego County's \$4,244 (national state DOTs average about \$6,000 per lane mile; the average for California Department of Transportation is \$10,172). While the averages for San Diego County do not reflect local economic conditions nor take into account the type of facilities, traffic, and weather conditions, they do demonstrate that road resources expended are similar to those of peer agencies.

In addition to benchmarking, the frequency, number of cycles, productivity, and types of activities necessary to maintain county roads were calculated and compared to the actual effort. This was done at all 11 road maintenance stations, and comparisons made by station. Further, the county's pavement rating system was used to evaluate quality by yard in comparison to the work done. The survey indicated that only nine percent of the county's roadways needed reconstruction. Sixty percent of the roadways were classified as very good or good.

Paramount to the success of the

management review was staff involvement. From the project start until completion, Road Maintenance staff was included, from line staff to senior management, during the evaluation process. Structured interviews were conducted with DPW executive staff; public works managers; superintendents for the two road divisions; staff responsible for traffic engineering, roads registry, pavement management, and loss mitigation; road crew supervisors and roads station staff; DPW fiscal staff; and San Diego County Traffic Advisory Committee representatives. Additional feedback was gleaned from community planning groups, the county's Office of Disaster Preparedness, and the law enforcement community.

All road stations were visited at least twice. Five steering committee meetings were held to keep concerned parties informed of the review's progress. By involving people from top to bottom, the process also helped break down internal barriers and compelled DPW staff to take a close, analytical look at how they "do business" and recommend ways to improve methodologies.

FINDINGS

The management review resulted in the creation of a baseline database that tied together infrastructure inventory, work units, hours, and productivity into a carefully calibrated work plan. This was used as a basis for station configuration, resource needs, determining levels of service and productivity, and to calculate unit costs. Key findings revealed:

- The road network is in good condition.
- A more optimal combination of road maintenance stations is possible.
- All levels of staff are dedicated to improving operations.
- Work processes vary.
- The division has more equipment than is needed.
- Organization changes should be considered.
- A comprehensive feature inventory of features (drainpipes, shoulders, etc.) needs compilation.



- Staffing is satisfactory.
- The county's pavement management system needs to be updated.
- Work activities are too "response driven."
- The accuracy of work recording/reporting needs improvement.

RESULTS

Since implementing many of the management review's recommendations, countywide routine maintenance efficiency has improved by almost seven percent, which translates to a recurring annual savings of more than \$2.3 million. These savings were achieved by reducing the equipment, labor, and materials needed to perform each unit of work and by performing maintenance tasks on a timely basis.

MANAGED COMPETITION

As mentioned earlier, prioritizing opportunities for managed competition was an original objective of the management review. In managed competition, public sector employees compete against the private sector to see who can do a job more cost-effectively. The functions performed by two contiguous county road stations, responsible for 320 miles of county-maintained roads, were initially identified as candidates for managed competition. The plan was to use these stations as a "pilot project" and if the concept proved successful, expand it to other stations.

To conduct the managed competition, the county requested a ruling from the State Department of Industrial Relations (DIR) concerning the wage rates a private contractor would have to pay its personnel for the various tasks performed by a road station. After consider-

able conversation with DIR, it ultimately ruled that any contractor hired by the county would have to pay prevailing wage rates. Because prevailing wage rates were higher than wage rates paid to public employees, the concept of managed competition for road station tasks was discarded.

Additional improvements in automated accident tracking, real property actions, and equipment pooling/master rental agreements are expected in 2001. The county has established processes that allow continuous tracking of accomplishments, and it now has a method of comparing that to the desired outcomes in quality, quantity, and cost. This will allow specific activities, from road grading to shoulder repair to asphalt

repair, to be refined and improved. Other improvements may result from further establishment of yard boundaries with labor and equipment matching precise work needs. Opportunities to group backup equipment and changed station boundaries may allow further fleet reductions.

These organizational improvements are providing more consistency and a businesslike approach to the maintenance of all Transportation Division operations, allowing more work at a lower cost. The net result is that the county's "customers," i.e., residents, benefit from improved services and maintenance, and the staff is taking greater pride and interest in delivering a top quality "product" in a cost effective manner. PW

Major improvements were identified in these areas:

- **Best management practices.** Establishing standardized documented work practices and processes with activity definition, crew complement, expected accomplishment, and work method for all activities and distributing to all crews allowed a complete evaluation of existing practice of preparatory work (patch and seal) of the county maintenance workers before overlay contracts versus the combining the preparatory work within the overall contract. Nearly \$1 million annually saved as a result.
- **Real property management.** Road fund properties were inventoried, and nine surplus parcels valued at \$425,000 were sold.
- **Fleet management.** Improvements included the sale and auctioning of unneeded vehicles (reduced by 41 pieces) worth \$1.6 million, improved rental procedures, and centralized equipment management.
- **Process improvements.** These included aligning various specialty (concrete and bridge) crews to report to yard locations (road station) closest to the workload versus prior historical reporting locations. Also, staff allocation ensures proper crew size at each work yard location to match workload.
- **Use of automated systems.** A new fully automated work scheduling system and long-term planning for county roads were implemented, which increases crew/equipment efficiency and also provides optimum cost-effectiveness based on road ratings and maintenance needs.
- **Organizational improvements.** Determining the workload by yard, balancing the resource needs for all roadway yards, then subsequently adjusting boundaries resulted in combining two yards, closing one, and shifting staff to appropriate locations.

METHODOLOGY IS THE KEY TO

Successful Maintenance Systems



Automation and software are not magic cure-alls for a successful application of a maintenance management system (MMS). Implemented properly, an MMS can accomplish the goals and objectives of controlling, planning, directing, and organizing an effective program and help agencies improve their maintenance operations. In fact, following the capital outlay for additional computer equipment that often accompanies setting up a new maintenance management system, less efficient operations may actually occur, due to redundant data collection, unnecessary processing of information, and unenthusiastic staff.

Harry C. Lorick

Mr. Lorick is Principal, Lorick Associates Consulting, Inc., El Segundo, California.

Some agencies have avoided these pitfalls, and garnered considerable success, including documented savings up to \$1 million annually. What have they done to achieve it? While the sizes and settings of each agency profiled here varied considerably—the first a suburban road department in a subtropical area, the second an

urban flood control and road maintenance operation, and the third a high desert public works department—similar threads run through their successful approaches.

Rick Ruiz is deputy director of public works for Alameda County, one of the most populous counties in California. Major municipalities include Oakland, Berkeley, and Hayward. Alameda County's system tracks reactive and proactive road, traffic, flood control, and bridge maintenance work. The system is now using the data for a complete benchmarking effort to improve maintenance operations.

Craig McConnell, P.E., is public works director for Charlotte County, Florida. Charlotte County, with over 2,080 road miles to maintain and a population of 130,000, is located in southwest Florida, about 100 miles south of Tampa. The system implemented in the county freed up \$750,000 annually, and more work is being done with fewer maintenance employees. McConnell used these savings to initiate long deferred road and drainage infrastructure rehabilitation.

Steve Varela is director of public works/city engineer for Reno, Nevada, population 162,000, and one of the fastest growing urban areas in the western U.S. Along with the city of Sparks, Reno is an urban area of more than 300,000, situated at the foot of the eastern Sierra Nevada Mountains. Varela's implementation of a system for roads, sewers, buildings, traffic, and environmental control resulted in efficiency improvements of about ten percent. One of the impacts was deprivatizing, or taking back sewer cleaning.

LESSONS LEARNED

All three public works officials stated that before automating any maintenance functions and/or purchasing any software and hardware, public agencies must clearly determine exactly what they want to accomplish and establish a structured "game plan" to get there. It is crucial to map the maintenance system that may

already be in place, and then analyze the existing processes for accomplishing maintenance tasks.

At the outset, one of the biggest challenges public agencies face in implementing a MMS comes from internal and/or external resistance and skepticism. "If there are parts of an MMS already in place, the internal comment might be, 'we've already got this—why do we need a new one?'" McConnell said. "There could be a similar external comment, often associated with the 'cost' of a new system."

McConnell added that "it took a year to gain approval to proceed with our project in Charlotte County and to convince those in the decision making process that it was a necessary investment and the most effective means of reforming road and drainage maintenance management. We also needed to demonstrate how the investment would recoup recurring future benefits in terms of cost efficiency and quality service."

**Agencies must look
at the maintenance
management system
outputs, what
attributes they have,
and how they are
to be used.**

Reno faced other challenges. Varela said the biggest hurdle was getting employees to "buy in" and understand the benefits—that an MMS was not a threat or just a simple tracking tool, but a comprehensive program that has now helped the city improve efficiency and competitiveness.

"Maintenance accounts for a major portion of the \$12 million spent in Reno on infrastructure each year," Varela said. "These dollars are now better spent by using automated systems to help the right people, materials, and equipment on the right job at the right time following the right methods."

Varela said that before any equip-

ment was purchased, a thorough analysis was conducted to understand all maintenance processes. The city was using an old computer system that would tell employees what sewer lines were scheduled for maintenance based on a 24-month service schedule. The system would immediately produce a list of sewer lines to service, but it did not tell them how or when to do the work.

"We figured out how to first resolve the problem, then purchased the necessary equipment to automate these functions. We now start from one upstream end of the sewer system and work our way down, which reduces set up time," Varela said. "By initially focusing on the process, we were able to accurately assess our equipment needs and ultimately implement better scheduling methods while improving the way we organize our work."

The officials added that re-engineering the processes that need improving are also paramount to having an effective MMS. It is important to first determine the most effective balance of in-house capabilities and manpower availability versus external support and process facilitation.

Alameda County's Rick Ruiz said that "benchmarking" his department's top ten activities, such as street sweeping, tree trimming, and a double-chip seal program, will be invaluable in determining what processes to target and improve. The county's MMS provides the basis for the benchmarking process.

Once the public agency has evaluated the maintenance management processes and set in place a methodology for re-engineering those areas in need of improvement, then automation needs can be determined.

McConnell said public agencies must look at the MMS system outputs, what attributes they have, and how they are to be used. They should assess the scale of the public agency's operations for the purpose of evaluating the needed information, work accomplishment, reporting, and determining how complex the auto-

dated system should be.

"There must be improved performance of work visible to the community, whether it's doing work which was not done before, or doing it more effectively and efficiently," he said. "Elected officials and their top government managers want to see demonstrated performance."

McConnell added that "the public agency should also obtain the services of an independent technical evaluator or facilitator—not someone with just an expertise in cost accounting, but experts who really know how to assess a road and drainage maintenance system and can look at how it relates to the institutional structure."

McConnell said that access to the MMS should be available to everyone since it is public information. "The access interfaces are important and there should be 'user-friendly' reports and data, from which they are compiled," he said. "The needs, look, and content of the reports have to be carefully considered as to use, and designed accordingly. In the next phase of Charlotte County's system development, map location and work scheduling information is to be made available to the public via the Internet."

Lastly, once new MMS software is utilized, it should be as transparent as possible relative to associated software applications, e.g., it should be able to interface with widely used programs and be upgradeable if necessary.

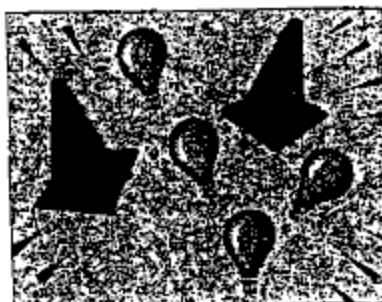
KEYS FOR SUCCESS

Numerous basic elements are necessary to implement a system that will assist, rather than hinder an agency in providing services to effectively meet customers' needs. A nationwide survey conducted by our firm highlighted some of these:

- Established goals for the system. Successful agencies understood the intent of the system and knew what it would be doing. The system goals were a subset of the goals for the department. If the intent is to improve response time, then response time must be a goal. For example, one maintenance agency surveyed want-

ed to improve their budget work tracking process, yet software purchased by their team from engineering and MIS was an asset management and work order system, which had no ability to budget or track against a budget.

- Commitment of management and supervisors. The desire to have a systems approach and to improve the operations must be agreed and "bought in" at the highest level. The system "champion" should be a senior manager-director of public works, city engineer, or maintenance manager. In addition, this proponent must have the support of the elected leaders in this process. Without a high level of commitment, key changes will be difficult to make. The three profiled agencies all had a senior manager driving the process.



- Involvement of maintenance staff and supervisors. The people that will actually be changing their way of doing business must be a part of the process. Many ideas and basic improvements can be obtained by including those closest to the work. In Reno, all maintenance supervisors and workers were involved and received training over a nine-month timeframe.

- Reengineering, not overlaying the existing process. Many unsuccessful systems simply add a new system on top of the existing manual and automate ways of conducting business. New systems should seek to streamline, improve, and reengineer various planning, tracking, and scheduling tools using the latest technology. Often, other data that have been collected can be combined with MMS data requirements; for example, eight existing databases were combined into one for Charlotte County, thus reducing data collection.

- Establishment of a continuous improvement process. Many systems are standard setups that become unusable when they do not adjust to the changing conditions that affect all public agencies. An orderly mechanism to update and reevaluate system and processes and work being managed must be part of the implementation. The system must change just as technology, customer demands, and the environment change.

- Well-defined methodologies to collect, store, summarize, and distribute information. If government employees are to use the MMS, the information collected must be readily available. A streamlined plan that can provide specific performance measures; generate schedules; track requests for service; record and summarize effort and expenditures; and compile and analyze data is required. The information must be stored in a retrievable database and statistics compiled. Then, the data are readily available for all decision makers to use and act on. Finally, guidance should be established on the interpretation and use of the information.
- Implementing a complete system to manage maintenance. An asset management system that contains all work inventory features such as pipes, sizes etc., is necessary. The ability to produce work orders based on requests and/or repetitive work is also important.

More fundamentally, however, annual work programs consisting of specific activities that roll up a budget are needed. The work programs and associated activities enable determination of the resources that will be needed to deliver the services. Further, the ability to track cost, productivity, unit cost, and resources expended versus a plan is critical. An agency must have both asset and work management tools in its MMS to be truly effective.

These three agencies applied these concepts, and their systems work. The systems enable determination of true costs, unit costs, productivity, service responsiveness, and accomplishments relative to defined goals. PW

[illegible]

Herndon Times / *San Jose Mercury*

² 2000年6月1日/1999年12月29日通过的《中华人民共和国合同法》第11条规定

Tel: 05144 LINE 21-2001

By FRED MIERS
Herald-Tribune Staff Writer

"We had to recognize we had to function as two separate organizations, serving rural Hernando County and Spring Hill, and do it with the same employees," Mixson said. "At

The problem four years ago was that the department's maintenance strategy was not based on serving heavily populated areas, he said. Until 1988, Spring Hill developers were still maintaining the most densely populated areas of the county.

But Mixson said he still wants help.

"You want to make sure they really maintain that 180 percent level of accountability...and improve on it," Whitehouse said.